Do Migrant Remittances Decline Income Gap in the MENA Region?

Khaled Elorabi

Ph.D. Candidate, Department of Economics, School of Business and Economics, UPM, Malaysia, Assistant Lecturer, Department of Economics, Faculty of Commerce, Mansoura University, Egypt.
Email: kh_elorabi@mans.edu.eg

Suryati Ishak

Senior Lecturer, Department of Economics, School of Business and Economics, UPM, Malaysia.
Email: suryatiis@upm.edu.my

Norashidah Mohamed Nor, Saifuzzaman Ibrahim

Associate Professor, Department of Economics, School of Business and Economics, UPM, Malaysia.

Abstract
This paper investigates the impact of inward remittances on income inequality in thirteen Middle East and North Africa (MENA) economies, spanning from 1996 to 2020, employing the pooled mean group (PMG) technique. This article reveals that remittances from migrants to the MENA region contribute to increased income inequality, indicating that the households receiving these remittances are initially relatively well-off, and the funds significantly enhance their living standards in comparison to other families. Consequently, the paper suggests addressing challenges faced by low-income individuals aspiring to migrate, particularly in nations with high unemployment rates. These challenges encompass educational and skill deficits, information disparities, and financial limitations. Furthermore, the paper proposes implementing supplementary policies to counteract the adverse effects of remittances on income distribution, including directing resources towards initiatives that benefit the less affluent, particularly those focused on improving education, healthcare, and infrastructure. Lastly, it emphasizes the importance of prioritizing policies that foster political stability to create a business environment conducive to human and infrastructure investments.
Keywords: Income Inequality, MENA, Political Stability, Pooled Mean Group, Remittances

Introduction

The Middle East and North Africa (MENA) region[1] possesses two-thirds of the world's known petroleum reserves and has a prominent strategic and historical location (Roudi-Fahimi & Kent, 2007). However, it has emerged as the region with the highest income inequality globally (WID, 2022). According to the World Inequality Database (2022), the MENA region has witnessed a significant and consistent rise in income inequality over the past three decades. The Gini index, which measures income inequality, averaged 0.71 in 1996, then slightly declined to 0.67 in 2010 due to notable economic progress in the region during that period. Despite this, the gap between the rich and the poor has not improved significantly in most countries of the area, and this was one of the reasons for the outbreak of the Arab Spring revolutions in 2010. Due to the political, economic, and social instability resulting from the uprisings and revolutions of the Arab Spring, income inequality began to rise until MENA became unequal worldwide. Since 2010, the Gini coefficient has increased until it reached 0.69 in 2020. Besides, several research studies have highlighted that a rise in income inequality is frequently associated with an increase in crime rates, the erosion of social cohesion, hindered economic growth, and, ultimately, a greater prevalence of poverty and other societal problems (Andrei & Craciun, 2015; Coccia, 2018; Lahouij, 2017; Min et al., 2015).

Over the past few decades, the inflow of remittances has become a major source of external financing for developing countries, surpassing other forms of international financial flows like foreign aid and portfolio investments (De Haas, 2006; Heilmann, 2006; Ebeke, 2012). In fact, the amount of money sent through remittances has exceeded foreign direct investments (FDI) in recent years. In 2022, developing countries received approximately $600 billion of remittances, while the FDI inflows amounted to around $182 billion during the same period (World Bank, 2022). According to World Bank data (2023), the MENA region took the lead in inward remittances as a proportion of GDP compared to other areas worldwide. Moreover, the inflow of remittances plays a vital role in financing development in MENA, helping countries fill the investment gap, stimulate sustainable economic growth, and tackle poverty. This is especially significant considering the decrease in domestic funding sources, the volatility of international oil prices, the substantial public debt levels, and the notable decline in other external financial resources like the FDI and foreign aid across most MENA countries in recent years (Elorabi et al., 2023).

The volume of remittances sent through official channels to MENA countries has experienced a significant increase, from approximately $11.3 billion in 1996 to around $58.7 billion in 2020, as indicated in Figure 1 below.

---

[1] The countries of the MENA region share many common characteristics related to their climate, environment, history, language and culture. According to the World Bank, this region includes Algeria, Bahrain, Djibouti, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Malta, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates, West Bank and Gaza (Palestine), Yemen, and most studies also include Turkey, Somalia, and Sudan (Agir et al., 2011; Mohamed & Sidiropoulos, 2010).
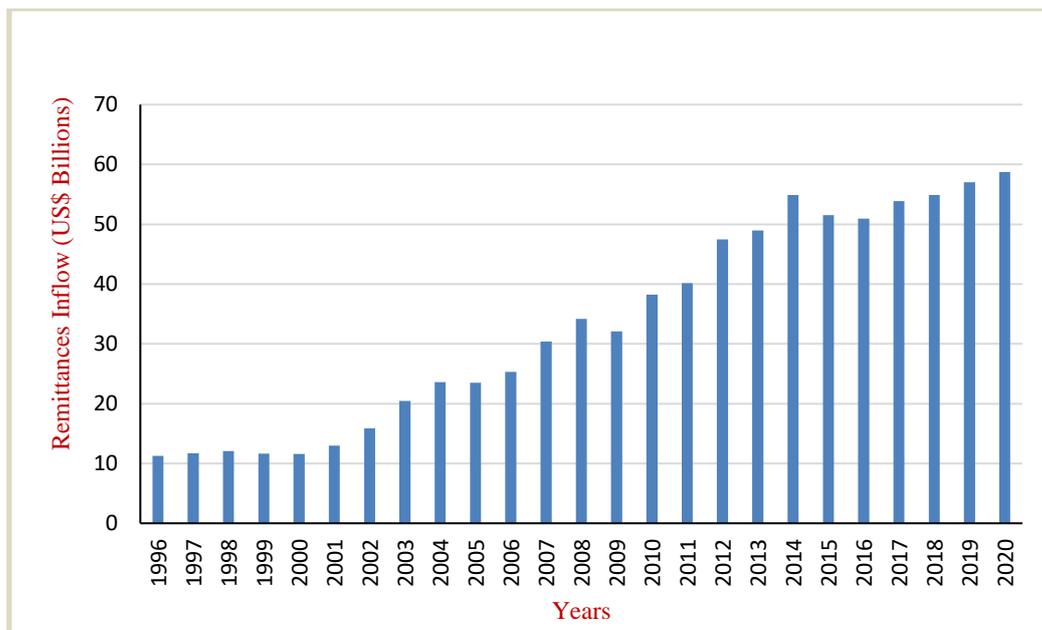
Figure 1: Remittance Inflows in the MENA region, 1996-2020
Source: Researcher's calculations, World Development Indicators (WDI), World Bank, 2022.

Furthermore, remittances flowing into MENA have surpassed other primary external sources of financing, including the FDI inflows. According to the World Bank (2022), the size of remittances in 2022 amounted to about $65.8 billion, exceeding the FDI inflows of $27.8 billion in the same year. Also, remittances are considered relatively stable and less volatile than other financial flows, making them a reliable source of international financing, especially during economic downturns and crises. Despite the significant role of remittances in the MENA region, their impact on income inequality in the region has received limited attention in research.

The inflow of remittances serves as a vital support system for recipient households, enabling them to improve their quality of life through better nutrition, housing, clothing, education, and healthcare (Tsaurai, 2018). Additionally, remittance recipients often save a portion of the funds, contributing to asset accumulation and providing a financial safety net (John, 2017). The inflow of remittances also provides access to resources necessary for business expansion or establishment (Borja & Hall, 2018; Mallick et al., 2020). Furthermore, remittance funds can be directed toward education and skill development, improving human capital and employability (Tsaurai, 2018). Indeed, remittances' impact on income distribution inequality in receiving nations relies on receiving families, as remittances can reduce income inequality when most remittance recipients are from low-income groups in society and vice versa.

Despite the MENA region experiencing a significant increase in remittance inflows, it has unfortunately become the most unequal region globally, with income inequality continuing to rise. Therefore, this study can provide critical insights for policymakers in the MENA region. It can help them design and implement policies that harness the potential of remittances to reduce income inequality, thereby contributing to social and economic stability. Also, remittances play a pivotal role in alleviating poverty by providing recipient households with resources for better nutrition, housing, education, and healthcare. Thus, understanding the relationship between remittances and income inequality can guide strategies aimed at reducing poverty rates. Moreover, high income inequality is often associated with social unrest and political instability. By investigating the impact of remittances on income

inequality, this study can offer valuable insights into how remittances may contribute to social cohesion and political stability in the MENA region. As well, if the study finds that remittances reduce income inequality when directed towards low-income families, this knowledge can empower marginalized and vulnerable populations, providing them with access to resources that can help break the cycle of poverty.

Based on the above, the objective of this study is to examine the effect of migrant remittances on income inequality among families in the MENA region. This article also contributes to the existing body of literature in several ways. Firstly, empirical results on the influence of remittances on income inequality in labor-exporting countries are conflicting, and previous studies have primarily focused on individual economies. However, this study takes a broader perspective by examining the link between remittances and income inequality in the MENA region, which has not yet been investigated. Secondly, by examining a 25-year period, the study can provide a long-term perspective on the impact of remittances. This is particularly valuable for understanding how remittances have evolved and their sustained effect on income inequality. Another significant contribution of this paper is the use of the PMG technique. In this method, (N) must be less than (T) or both T and N must be considerably large (i.e.,> 20), and our study covers a period of 25 years (1996-2020) for selected MENA countries. Finally, the study of the impact of migrant remittances on income inequality in the MENA region is not only relevant but also vital for the region's development, stability, and the well-being of its people. Its utility and effectiveness extend beyond academic research, offering concrete guidance for policymakers, development organizations, and individuals working to address the pressing issue of income inequality. This research has the potential to be a catalyst for positive change in a region with complex economic and social challenges.

The rest of the paper is organized into five sections. Section 2 of the study examines the relevant literature, while Section 3 outlines the methodology and data employed in this paper. Section 4 presents the empirical findings and their interpretations. The concluding section summarizes the key points and offers policy suggestions.

Review of Literature

Leading literature on migration, remittances, and inequality provides the theoretical framework for our empirical analysis. In a model developed by Docquier and Rapoport (2003), and then by Shen et al (2010), the economy has two types of households according to productivity. Low-productivity households show more significant constraints on liquidity and assets, while high-productivity families show the opposite. According to consumer theory, every family seeks to maximize utility given its available budget.

Migrant remittances expand families' budgets and raise their standard of living to a higher steady state. Therefore, the effect of inward remittances on income inequality in receiving economies depends on receiving families. If most of the individuals who receive remittances are from low-income families, then the income gap between the individuals will be reduced, but when most of them are not poor, the income inequality in society will be expanded.

Several studies, such as Adams (1989); Anyanwu (2011); Howell (2017); John (2017); Miftah & Bouoiyour (2014), confirmed that wealthier families are better able to send their individuals overseas. Therefore, most of the remittances are directed to those families, implying increased inequality of income. Nevertheless, other studies have proven that thanks to social networks and aid from well-established groups in the receiving country, low-income families can migrate and remit to their families; thus remittances can reduce the income gap between people (Borja, 2013; Woodruff & Zenteno, 2007).

The remittances' effect on income distribution inequality remains a subject of ongoing debate in the empirical literature without a clear consensus. For instance, Bkwayep & Tsafack (2020) conducted a study on 47 countries from 2004 to 2014 to examine the relationship between remittances, financial inclusion, and income inequality. Using the GMM method, their findings indicated that increased remittance inflows were linked to decreased income inequality. Another study by Borja & Hall (2018) explored the association among migrant remittances, quality of institutions, and inequality of income in 79 countries from 1990 to 2010. Employing the 2SLS technique, they observed that remittance-receiving countries with better institutional quality experienced more significant reductions in income inequality. Also, Tsaurai (2018) analyzed the interaction between remittances, human capital development, and income inequality in twelve emerging markets between 2004 and 2014 using fixed effects, pooled OLS, and random effects. The results demonstrated that increased remittances and improvements in human capital were associated with a decrease in income inequality.

In the same vein, Akobeng (2016) conducted a study on 41 Sub-Saharan African countries from 1981 to 2010 using the GMM estimator. The study focused on the impact of remittances on inequality and poverty in the region. The findings indicated that remittance inflows were associated with declining income inequality in Sub-Saharan Africa. Also, Anyanwu (2016) identified the inflow of remittances as one of the major factors contributing to the reduction of income inequality in those economies. As well, Kimhi (2010) conducted research in the Dominican Republic to measure the effects of remittances on income distribution. The study's findings indicated that remittances significantly diminished income inequality, primarily attributed to their positive influence on education.

On the other hand, John (2017) conducted a study in India using fixed effect, random effect, and pooled OLS methods to analyze the impact of migration on income inequality. The study discovered that migration and remittances played a noteworthy role in contributing to income inequality among non-migrant and migrant households, as well as among different households. Moreover, Mollers & Meyer (2014) assessed the influence of migration and remittances on inequality of income and poverty in rural Kosovo and found that the inflow of remittances increased income inequality in the region. In another work, Howell (2017) focused on the influence of remittances from migrants on the disparity of income in rural minority regions of China using household data. The findings revealed that while remittances contributed to increased income among ethnic groups in rural China, they also led to higher income inequality between these ethnic groups. Also, Miftah and Bouoiyour (2014)) utilized the probit model to investigate the impact of remittances on poverty and income inequality in rural areas of Morocco in 2009. The study demonstrated that remittance inflows were associated with increased income inequality in those regions.

Based on the above, the results of several studies have shown that remittances have a significant impact on reducing income inequality (Akobeng, 2016; Anyanwu, 2016; Bkwayep & Tsafack, 2020; Tsaurai, 2018), while few others have confirmed the opposite. Indeed, remittances' impact on income distribution inequality in receiving nations relies on receiving families (Howell, 2017; John, 2017; Mollers & Meyer, 2014). Inward remittances can reduce income inequality when most remittance recipients are from low-income groups in society and vice versa.

Methodology

Model Specification

Following the theoretical underpinnings and the empirical work of (Akobeng, 2016; Anyanwu, 2011; Borja & Hall, 2018; Calderón & Chong, 2001; Letsoalo & Ncanywa, 2021; Mallick et al., 2020; Tsaurai, 2018), among many others, this study specifies our model as follows

$$GINI = f(REM, PS, GDPGR, TR, EDU, INF) \qquad (1)$$

From the equation above, GINI denotes the Gini Coefficient that measures income inequality, REM is remittance inflows as a percentage of GDP, PS symbolizes political stability, GDPGR is the growth rate of real GDP, TR signifies trade openness, EDU is the percentage of gross secondary school enrolment, and INF is the inflation rate. The lagged value of income inequality would be added to equation (1) because income inequality is a dynamic variable, as past income inequality is a vital indicator of current income inequality (Akobeng, 2016; Calderón & Chong, 2001). Hence, the model specification for this objective should take the following form

$$GINI_{it} = \beta_0 + \beta_1 GINI_{it-1} + \beta_2 REM_{it} + \beta_3 PS_{it} + \beta_4 GDPGR_{it} + \beta_5 TR_{it} + \beta_6 EDU_{it} + \beta_7 INF_{it} + \mu_{it} \qquad (2)$$

Where; $GINI_{it-1}$ denotes the lag of income inequality, the subscripts i and t are denoted to country and time, and μ is the error term.

Method of Estimation

This paper uses the autoregressive distributed lag (ARDL) model with a pooled mean group (PMG) estimator developed by Pesaran et al (1999) on longitudinal /panel data. In this method, it's essential that the number of time periods (T) exceeds the number of countries (N), or both T and N should be substantially large. The PMG can generate dynamic heterogeneous consistent estimates of the long-run parameters that are asymptotically normal, regardless of whether the underlying independent variables are integrated of the first order I(1) or order zero I(0). In addition, it can predict the dynamic short-run and long-run relationship between the different variables under study.

The PMG estimator allows for a specific econometric specification by assuming common long-term effects while considering data-driven short-term dynamics for each country in the panel, as explained by (Jehangir et al., 2020). The PMG method produced reliable outcomes by accommodating diverse short-term dynamics while assuming consistency in the long-term coefficients. Unlike the Mean Group (MG) method, the PMG technique assumes that certain parameters are consistent across countries, as noted by (Chebab et al., 2022). Additionally, the PMG method tackles the issue of heterogeneity bias, which is often encountered when using the Dynamic Fixed Effect (DFE) technique. Lastly, the PMG method has demonstrated efficiency even when working with a small sample size, as the standard t- and F-tests remain applicable for the long-term parameters obtained from the Error Correction Models (ECMs), according to (Pesaran et al., 1999).

Description of Variables and Data

In this study, 13 countries in the MENA region—Algeria, Egypt, Djibouti, Iran, Israel, Jordan, Morocco, Palestine, Sudan, Syria, Tunisia, Turkey, and Yemen—were selected based on their relevance to remittance inflows and the availability of data. The research spanned 25 years, from 1996 to 2020.

The study employs the Gini index, a measure of income distribution within a country, which quantifies the extent to which income distribution deviates from perfect equality. This index is scaled between zero and one, where zero signifies perfect income equality, and one represents maximum income inequality. Data for the Gini coefficient is sourced from the World Inequality Database (WID). Additionally, remittances as a percentage of GDP are used to measure remittance inflows, with data collected from the World Development Indicator database (WDI) of the World Bank.

Following existing empirical literature (Ajeeb et al., 2023; Akobeng, 2016; Borja & Hall, 2018; Koechlin & León, 2007; Mallick et al., 2020; Tsaurai, 2018; Waheed & Shittu, 2012), this paper also incorporates various control variables. These include the political stability and absence of violence/terrorism index (a measure of political stability), the annual percentage growth rate of GDP (an indicator of economic growth), trade as a percentage of GDP (a measure of trade openness), the percentage of gross secondary school enrolment (a measure of education), and the percent change in the Consumer Price Index (CPI) to assess the inflation rate. Data for these control variables used in the analysis is sourced from the WDI of the World Bank databases, except for the data on political stability, which is obtained from the worldwide governance indicators (WGI) of the World Bank databases.

Empirical Results and Discussions
Descriptive Statistics and Correlation Matrix
Table 1 displays the descriptive statistics for both the dependent and independent variables, offering an insight into the dataset utilized in this research. The table encompasses details like the number of observations, the average, the standard deviation, as well as the highest and lowest values for each variable.

Table 1
Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
GINI	325	60.19231	4.686335	48.8	70.05
REM	325	5.204985	6.096617	0.06	26.32
PS	325	-1.0512	0.8033768	-3.01	0.49
GDPGR	325	3.156369	5.168318	-27.99	21.93
TR	325	79.50954	60.65003	0.78	348
EDU	325	70.54982	22.69702	11.78	107.25
INF	325	10.50246	16.81405	-3.85	150.32

Note: Obs. = observations, Std. Dev. = standard deviation, Min = minimum values, and Max = maximum values of the variables. All variables are not in logarithmic form.

Table 2 illustrates the correlation coefficients between variables. Correlation analysis is employed to evaluate whether there is multicollinearity among the predictors. The correlation matrix indicated that the correlation coefficient between any pair of explanatory variables was less than 0.80, signifying the absence of serious multicollinearity.

Table 2
Correlation Matrix

Correlation	GINI	REM	PS	GDPGR	TR	EDU	INF
GINI	1.0000						
REM	0.2361	1.0000					
PS	-0.1287	-0.0237	1.0000				
GDPGR	-0.0634	0.0066	0.2954	1.0000			
TR	0.0504	0.0986	0.4355	0.1133	1.0000		
EDU	-0.1401	-0.0441	0.0507	0.0621	-0.3040	1.0000	
INF	0.0775	-0.1537	-0.3784	-0.1897	-0.2998	-0.1642	1.0000

Unit Roots Tests

Table 3 presents the results of the panel unit root tests, including the ADF and PP tests. Based on the results, the growth rate of GDP and inflation are stationarity at the level I(0), while the rest variables are stationarity at the first difference I(1).

Table 3
Unit Root Tests

Variable	Statistics	Level I(0)		1st difference I(1)	
		Constant	Constant & Trend	Constant	Constant & Trend
GINI	ADF- Fisher	49.8883***	31.2995	64.4473***	56.1770***
	PP - Fisher	30.6085	9.67247	63.5853***	47.2327***
REM	ADF- Fisher	17.5287	29.5917	149.611***	120.342***
	PP - Fisher	18.1100	22.1711	173.484***	159.304***
PS	ADF- Fisher	23.8969	35.0103	165.940***	107.178***
	PP - Fisher	19.0937	21.9064	172.402***	233.793***
GDPGR	ADF- Fisher	99.2007***	91.4177***	248.842***	248.249***
	PP - Fisher	89.6410***	78.3706***	415.127***	1160.66***
TR	ADF- Fisher	16.7087	33.3087	155.284***	136.147***
	PP - Fisher	18.7121	14.9636	158.399***	168.682***
EDU	ADF- Fisher	31.8377	39.8529**	108.302***	93.3694***
	PP - Fisher	37.7074	27.3825	136.121***	106.982***
INF	ADF- Fisher	114.703***	115.903***	274.597***	255.655***
	PP - Fisher	117.356***	122.992***	586.635***	1270.57***

Note: ***, **, and * signify significance at the one percent, five percent, and ten percent levels, respectively. Automatic selection of lag length based on the Schwarz Information Criterion (SIC). The t-statistic values are reported, and nonstationary is the null hypothesis.

Optimal Lag Length Selection

The results of the lag selection are presented in Table 4. It is clear that the third model is the most acceptable out of the four models, as the value of the Akaike information criterion (AIC), Schwarz Bayesian information criterion (SBIC) and Hannan and Quinn information criterion (HQIC) for that model was the least among the other models.

Table 4
Lag Length Selection

Model	Specification	AIC	HQIC	SBIC
1	ARDL(1, 1, 1, 1, 1)	0.424254	0.899787	1.612356
2	ARDL(1, 2, 2, 2, 2, 2)	0.327164	1.124673	2.319711
3*	ARDL(2, 1, 1, 1, 1, 1)*	-0.102028*	0.437901*	1.246963*
4	ARDL(2, 2, 2, 2, 2, 2)	-0.030105	0.831799	2.123331

Cointegration Tests

Table 5 indicates the Kao panel cointegration test between income inequality, inward remittances, political stability, gross domestic product growth rate, trade openness, education level, and inflation. The test demonstrates the presence of a cointegration relationship among the variables.

Table 5
Kao Cointegration Test

Test	t-Statistic	Prob.
Kao Residual Cointegration Test	-2.084690	0.0185

Notes: The null hypothesis is no cointegration—automatic lag length selection based on SIC with a max lag of 5.

Empirical Results and Discussion of the PMG Estimation

Once this cointegration link is established, we proceed to estimate the coefficients of these variables using the PMG method. The PMG technique is used to estimate the outcomes, as indicated in Table 6.

Table 6
Results of the PMG Estimates

Dependent Variable: Gini Index (Income Inequality)	
ARDL (2, 1, 1, 1, 1, 1, 1)	
Estimated long-run equation	
REM	0.4712906***
	(0.1484047)
PS	-5.239097***
	(0.5785372)
GDPGR	-0.1968993***
	(0.0450701)
TR	0.0175756
	(0.0146087)
EDU	0.0246119
	(0.0179255)
INF	0.0524784***
	(0.0108417)
Estimated short-run equation	
ECT	-0.0718435**
	(0.0361847)
Δ GINI(-1)	0.4434126***
	(0.1110684)
Δ REM	-0.2497685
	(0.255109)
Δ PS	0.1107918
	(0.1970644)
Δ GDPGR	-0.0000204
	(0.0045829)
Δ TR	0.0199457**
	(0.0087499)
Δ EDU	0.0246651
	(0.0194471)
Δ INF	0.0038102
	(0.0088593)
Constant	3.610669**
	(1.883762)
No. of countries	13
No. of observations	299
Log-Likelihood	92.67013

Note: ***, **, and * symbolize significance at the 1%, 5%, and 10% levels, respectively. Standard errors are in parentheses.

Table 6 reports the estimation of the long-run and the short-run coefficients of the impact of explanatory variables on income inequality using the PMG estimator, together with the convergence parameter (ECM) that indicates a tendency to adjust from the short-run to the long-run. Firstly, the sign of the long-run adjustment coefficient (ECM) is as expected and

significant at a level of 5%, which implies the adjustment dynamic of income inequality from the short-run to the long-run equilibrium across MENA countries. The value means that income inequality, inward remittances, and the control variables can adjust back to a long-run situation out of their disequilibrium at a speed of 7%, taking 14 years and three months (1/0.07).

Additionally, the results reveal that inward remittances have a positive and statistically significant long-term impact on income inequality. To be specific, a 1% rise in remittances results in a 0.47 increase in income inequality within MENA countries. This implies that individuals who receive remittances tend to be non-poor initially, and the inflow of remittances enhances their spending and living standards more than others. Consequently, the receipt of remittances contributes to an uptick in income inequality. This result aligns with earlier empirical investigations carried out by (Howell, 2017; John, 2017; Miftah & Bouoiyour, 2014; Mollers & Meyer, 2014).

The political stability coefficient demonstrates a significant and negative impact on income inequality in the long run, with significance at the 1% level. Multiple studies have presented evidence that political stability has the potential to mitigate income inequality among individuals (Josifidis et al., 2017; Kemp-Benedict, 2011; Nikoloski, 2009; Siddique et al., 2019). When political stability deteriorates, a notable portion of the resources earmarked for initiatives aimed at reducing income inequality is redirected towards security expenditures. Furthermore, episodes of strikes and violence disrupt educational institutions, leading to reduced access to quality education. Consequently, individuals' prospects for upward mobility are constrained, perpetuating income inequality. Additionally, the presence of uncertainty hampers business activities and discourages investments, exacerbating income inequality by limiting job opportunities and income sources (Borja & Hall, 2018; Chong & Gradstein, 2007; Shams & Kadow, 2020; Tsaurai, 2018).

Similarly, the results indicate a significant inverse link between GDP growth and income inequality within MENA countries. To be specific, a 1% rise in economic growth is associated with a 0.197% reduction in income inequality. Economic growth plays a vital role in diminishing income inequality by generating job opportunities and increasing individuals' incomes, thus enhancing their overall well-being. Furthermore, employment growth contributes to mitigating unemployment, income inequality, and poverty. This negative relationship between economic growth and income inequality aligns with findings in prior research (Akobeng, 2016; Borja & Hall, 2018; Mallick et al., 2020; Tsaurai, 2018).

Additionally, the coefficient for trade openness exhibits a positive but insignificant long-term impact on income inequality in MENA countries, while it is significant in the short run at a 5% level. This suggests that when trade liberalization occurs between MENA nations and other regions, income inequality tends to increase temporarily. This is because trade openness stimulates the growth of export and import sectors, generating more jobs. However, it also leads to a skill-biased technological shift, where low-skilled workers face job losses while skilled workers benefit, thus perpetuating income inequality. These findings correspond with prior research by Galiani & Sanguinetti (2003); Meschi & Vivarelli (2007); Tsaurai (2018), which revealed that trade openness increased income inequality in the short run. The study also found that the connection between the level of education and income inequality is positive but insignificant in both the short and long run. This implies that an increase in the educational attainment of the population does not significantly impact income distribution inequality in the MENA region.

Finally, the research indicates that the relationship between inflation and income inequality in MENA countries is positive and significant at a 1% level in the long run. This confirms that high inflation erodes the value of the income of the poor while the value of the savings of the rich is protected by the resulting increase in interest rates (Albanesi, 2007; Romer & Romer, 1998). Erosa and Ventura (2000) also stated that lower-income groups are more susceptible to inflation because they incur higher transaction services costs as they hold more of their wealth in the form of a currency. Thus, a higher price level in a society leads to more income inequality rate (Akobeng, 2016; Anyanwu, 2011; Tsaurai, 2018).

Conclusion
Over the past few decades, the MENA region has grappled with substantial violence and political instability, resulting in a downturn in economic factors like growth, job opportunities, and the distribution of income. Nonetheless, amid these challenges, remittances flowing into the region have surged, becoming a significant source of foreign exchange for numerous MENA nations. Therefore, the objective of this study is to investigate the influence of remittance inflows on income inequality in specific MENA countries over 25 years, utilizing the pooled mean group (PMG) method.

The study's findings confirmed that the inflow of remittances into the MENA region has a noteworthy and positive effect on income inequality. This implies that as migrant remittances increase, the income disparity among individuals in the recipient countries widens. This means that most households receiving remittances from the MENA region are already relatively well-off, and the receipt of these remittances substantially improves their standard of living compared to other families. Furthermore, the research results indicated that political stability and GDP growth have a significant and negative influence on income inequality over the long term. This suggests that a stable political environment and economic growth play a pivotal role in reducing income inequality by creating job opportunities and increasing individuals' incomes, thus enhancing their overall well-being. Additionally, trade openness and education level exhibited insignificant long-term effects on income inequality, while the outcomes confirmed that high inflation in the MENA region leads to increased income inequality among its people.

The outcomes of this study can provide valuable insights for governments and policymakers seeking to understand the impact of remittances on income distribution in MENA countries. They can use this knowledge to formulate complementary policies aimed at mitigating the negative effects of remittances on income distribution in recipient nations. Such policies could involve directing resources toward initiatives that benefit the less affluent, particularly those focused on enhancing education, healthcare, and infrastructure. Additionally, there's a need to establish effective programs that address the challenges faced by low-income individuals who aspire to migrate, especially in countries with high unemployment rates. These programs should tackle issues like educational and skill deficiencies, lack of information, and financial constraints. Furthermore, it is of utmost importance to prioritize policies and initiatives that enhance political stability.

Finally, this study investigated only the relationship between remittances, political stability, and income inequality in the MENA region. Hence, future research may look at these relationships in other world areas to see if they lead to similar or different results. Also, future research may investigate whether the relationship between migrant remittances and income inequality is linear or nonlinear and depends on a certain institutional quality threshold.

References

Adams Jr, R. H. (1989). Worker remittances and inequality in rural Egypt. *Economic Development & Cultural Change*, *38*(1), 45–71. https://doi.org/10.1086/451775

Agir, H., Kar, M., & Nazlıoğlu, Ş. (2011). Do remittances matter for financial development in the MENA region? Panel cointegration and causality analysis. *Empirical Economics Letters*, *10*(5), 449–456.

Ajeeb, S., Sieng, L. W., & Elorabi, K. (2023). Does The Mortgage Has an Impact on The Stability of The House Prices in Saudi Arabia? *Mechanisms and Machine Science*, *15*(1), 377–398.

Akobeng, E. (2016). Out of inequality and poverty: Evidence for the effectiveness of remittances in Sub-Saharan Africa. *Quarterly Review of Economics and Finance*, *60*, 207–223. https://doi.org/10.1016/j.qref.2015.10.008

Albanesi, S. (2007). Inflation and inequality. *Journal of Monetary Economics*, *54*(4), 1088–1114. https://doi.org/10.1016/j.jmoneco.2006.02.009

Andrei, A., & Craciun, L. (2015). Inequality and economic growth: theoretical and operational approach. *Theoretical and Applied Economics*, *22*(1), 195–204.

Anyanwu, J. (2011). International Remittances And Income Inequality In Africa. In *Review of Economic and Business Studies* (Vol. 4, Issue 1).

Anyanwu, J. C. (2016). Empirical analysis of the main drivers of income inequality in Southern Africa. *Annals of Economics and Finance*, *17*(2), 337–364.

Bkwayep, Y., & Tsafack, N. R. (2020). Remittances, Financial Inclusion and Income Inequality in Africa. In *MPRA Paper No. 99684*. https://mpra.ub.uni-muenchen.de/99684/1/MPRA_paper_99684.pdf

Borja, K. (2013). Home and host country business cycles and remittances: the case of El Salvador and The Dominican Republic. *Applied Econometrics and International Development*, *13*(10), 101–118.

Borja, K., & Hall, J. D. (2018). Remittances, Institutions, and Inequality in Developing Countries. *Journal for the Advancement of Developing Economies*, *7*(1), 18–40. https://doi.org/10.32873/unl.dc.jade7.1.3

Calderón, C., & Chong, A. (2001). External sector and income inequality in interdependent economies using a dynamic panel data approach. *Economics Letters*, *71*(2), 225–231. https://doi.org/10.1016/S0165-1765(01)00374-3

Chebab, D., Mazlan, N. S., Rabbani, M. R., Chin, L., & Ogiri, A. I. (2022). The Role of Corruption in Natural Resource-Financial Development Nexus: Evidence from MENA Region. *Institutions and Economies*, *14*(2), 1–29. https://doi.org/10.22452/IJIE.vol14no2.1

Chong, A., & Gradstein, M. (2007). Inequality and institutions. *The Review of Economics and Statistics*, *89*(3), 454–465.

Coccia, M. (2018). Violent Crime Driven by Income Inequality between Countries. *Turkish Economic Review*, *5*(1), 33–55.

De Haas, H. (2006). Migration, remittances and regional development in Southern Morocco. *Geoforum*, *37*(4), 565–580. https://doi.org/10.1016/j.geoforum.2005.11.007

Docquier, F., & Rapoport, H. (2003). Remittances and inequality: A dynamic migration model. *IZA Discussion Paper No. 808*.

Elorabi, K., Ishak, S., Nor, N. M., & Ibrahim, S. (2023). *Does Governance in MENA Countries Attract Migrants' Remittances? 10*(1), 24–37. https://doi.org/https://doi.org/10.14738/assrj.101.13763

Erosa, A., & Ventura, G. (2000). On inflation as a regressive consumption tax. In *Department of Economics Research Reports, 2000-1. London*. https://doi.org/10.1016/S0304-

3932(02)00115-0

Galiani, S., & Sanguinetti, P. (2003). The impact of trade liberalization on wage inequality: Evidence from Argentina. *Journal of Development Economics*, *72*(2), 497–513. https://doi.org/10.1016/S0304-3878(03)00117-2

Heilmann, C. (2006). Remittances and the migration-development nexus-Challenges for the sustainable governance of migration. *Ecological Economics*, *59*(2), 231–236. https://doi.org/10.1016/j.ecolecon.2005.11.037

Howell, A. (2017). Impacts of Migration and Remittances on Ethnic Income Inequality in Rural China. *World Development*, *94*, 200–211.
https://doi.org/10.1016/j.worlddev.2017.01.005

Hubert Ebeke, C. (2012). Do remittances lead to a public moral hazard in developing countries? An empirical investigation. *Journal of Development Studies*, *48*(8), 1009–1025.

Jehangir, M., Lee, S., & Park, S. W. (2020). Effect of foreign direct investment on economic growth of Pakistan: The ardl approach. *Global Business and Finance Review*, *25*(2), 19–36. https://doi.org/10.17549/gbfr.2020.25.2.19

John, R. (2017). A Panel Data Analysis of Relationship between Migration and Inequality. *IIM Kozhikode Society & Management Review*, *6*(1), 98–109.
https://doi.org/10.1177/2277975216678358

Josifidis, K., Supic, N., & Beker-Pucar, E. (2017). Institutional quality and income inequality in the advanced countries. *Panoeconomicus*, *64*(2), 169–188.

Kemp-Benedict, E. (2011). Political regimes and income inequality. *Economics Letters*, *113*(3), 266–268. https://doi.org/10.1016/j.econlet.2011.08.002

Kimhi, A. (2010). International Remittances, Domestic Remittances, and Income Inequality in the Dominican Republic. *Discussion Paper No. 2.10*.
https://doi.org/10.5296/rae.v12i3.16235

Koechlin, V., & León, G. (2007). International remittances and income inequality: An empirical investigation. *Journal of Economic Policy Reform*, *10*(2), 123–141.

Lahouij, H. (2017). The Effects of Income inequality on Economic Growth Evidence from MENA Countries. *Excellence in Student Researchand Creative Activity*, 1–26. http://thekeep.eiu.edu/lib_awards_2017_docshttp://thekeep.eiu.edu/lib_awards_2017_docs/4

Letsoalo, T. E., & Ncanywa, T. (2021). Effects of external financial flows on income inequality in selected Southern African Development Community member states. *Africa's Public Service Delivery and Performance Review*, *9*(1), 1–8.
https://doi.org/10.4102/apsdpr.v9i1.476

Mallick, H., Mahalik, M. K., & Padhan, H. (2020). Does globalization exacerbate income inequality in two largest emerging economies? The role of FDI and remittances inflows. In *International Review of Economics* (Vol. 67, Issue 4). Springer Berlin Heidelberg. https://doi.org/10.1007/s12232-020-00350-0

Meschi, E., & Vivarelli, M. (2007). Trade Openness and Income Inequality in Developing Countries. *Comparative and General Pharmacology*, *July*.

Miftah, A., & Bouoiyour, J. (2014). The effects of remittances on poverty and inequality: Evidence from rural southern Morocco. *MPRA Paper No. 55686*. http://ideas.repec.org/p/dau/papers/123456789-13287.html

Min, H.-G., Shin, S.-O., & McDonald, J. A. (2015). Income Inequality and the Real Exchange Rate: Linkages and Evidence. *Annals of Economics and Finance*, *16*(1), 115–141.

Mohamed, S. E., & Sidiropoulos, M. G. (2010). Does workers' remittances affect growth: Evidence from seven MENA labor exporting countries. *International Research Journal of Finance and Economics*, *46*, 181–194.

Mollers, J., & Meyer, W. (2014). The effects of migration on poverty and inequality in rural Kosovo. *Journal of Labour and Development*, *3*(16), 1–18.

Nikoloski, Z. (2009). "Economic and Political Determinants of Income Inequality" By Zlatko Nikoloski Advisors: Dr. Christopher Gerry and Dr. Tomasz Mickiewicz University College London, London, United Kingdom. *London (GB): University College London*.

Pesaran, M., Shin, Y., & Smith, R. P. (1999). Pooled mean group estimation of dynamic heterogeneous panels. *Journal of the American Statistical Association*, *94*(446), 621–634.

Romer, C. D., & Romer, D. H. (1998). Monetary policy and the well-being of the poor. In *Working Paper 6793*.

Roudi-Fahimi, F., & Kent, M. M. (2007). Challenges and Opportunities--the Population of the Middle East and North Africa. *Population Bulletin*, *62*(2).

Shams, K., & Kadow, A. (2020). Income inequality, remittances and economic wellbeing in rural Pakistan: linkages and empirical evidence. *Asia-Pacific Journal of Regional Science*, *4*(2), 499–519.

Shen, I. L., Docquier, F., & Rapoport, H. (2010). Remittances and inequality: A dynamic migration model. *Journal of Economic Inequality*, *8*(2), 197–220. https://doi.org/10.1007/s10888-009-9110-y

Siddique, H., Majeed, T., & Shehzadi, I. (2019). Impact of Political Instability on Economic Growth, Poverty and Income Inequality. *Pakistan Business Review*, *20*(4), 825–839. https://doi.org/10.17059/ekon.reg.2021-2-16

Tsaurai, K. (2018). Is the complementarity between remittances and human capital development a panacea for income inequality reduction? *International Journal of Services, Economics and Management*, *9*(1), 1–17. https://doi.org/10.1504/IJSEM.2018.095610

Waheed, O. O., & Shittu, A. M. (2012). Remittances and income inequality in rural Nigeria. *Journal of Business Management and Economics*, *3*(5), 210–221.

WID. (2022). *World Inequality Database: Income Inequality*. https://wid.world/data/. [Accessed by: 02/2022]

Woodruff, C., & Zenteno, R. (2007). Migration networks and microenterprises in Mexico. *Journal of Development Economics*, *82*(2), 509–528. https://doi.org/10.1016/j.jdeveco.2006.03.006

World Bank. (2022). *World Development Indicators*. https://databank.worldbank.org/source/world-development-indicators.[Accessed by: 05/2023]

World Bank. (2023). *World Development Indicators: Personal remittances, received (% of GDP)*. https://databank.worldbank.org/source/world-development-indicators. [Accessed by: 01/2023]