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Nexus between poverty gap and macroeconomic performance in the MENA region during the period 1990-2021

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Abstract. The study aims to explore the impact of some macroeconomic performance indicators on the poverty gap in the countries of the Middle East and North Africa (MENA) during the period 1990-2021. The study used the econometric approach, where a correlation matrix was built between the variables, considering the poverty gap as a dependent variable, and four independent variables which are: the rate of inflation, the rate of population growth, the rate of economic growth, and the ratio of reserves to external debt. Applying the Unit Root test, and then the ARDL model to investigate the effect of independent variables on the poverty gap using E-Views 12. The study found that the results, in general, match with the economic theory, as in the short and long run, the rate of inflation increases the poverty rates in the (MENA) countries during the period 1990-2021; the decreasing ratio of reserves to external debt increase the poverty rates. The research also found that increasing exports had a positive impact on decreasing poverty in MENA region, while the population growth rate is associated with the most significant negative impact on poverty in those countries. The study confirmed that the effect of GDP growth on the poverty gap will be significant only after two lag periods. So, the study recommends applying economic policies that reduce inflation rates by using fiscal policy tools through reducing government spending or raising tax rates taking into account the need to support the poorest segments, raising export rates through an industrial and agriculture policy that supports the quality and competition of local products in global markets. We also recommend raising the reserve ratio to the total external debt, which may occur in the event of an improvement in export rates. It also requires population policies that reduce population growth rates. And finally, economic growth couldn't reduce poverty without economic policies solving equality issues between different segments of the population.

Keywords. Poverty gap, total Reserves, External Debt, Exports, Population, GDP, Annual Growth, Inflation, Middle East and North Africa (MENA)

Introduction:

Poverty is one of the most serious economic problems that many countries of the world suffer from, especially developing countries.

Given that the problem of poverty is a central problem because it deepens other problems such as the lack of levels of education, health, food, and adequate housing, it was mentioned within the goals of the United Nations for sustainable development a basic goal, which is the eradication of poverty, and the current study aims to focus on investigating the

most macro-economic variables that deepen the poverty gap in the countries of the Middle East and North Africa (MENA Region) during the period from 1990 to 2021. According to economic theory and previous literature on the causes and incentives of poverty, the current study used some internal macroeconomic variables such as the population growth rate, exports, inflation, GDP annual percentage growth, and total reserves (% of total external debt), trying to find out the impact of each of them and its relationship to the development of poverty in the countries under study during the aforementioned period.

Thus, the current study has applied importance that lies in an attempt to investigate the most profound macroeconomic variables affecting the problem of poverty in the countries of the MENA region in order to come up with recommendations that serve as applied policies for decision-makers in those countries, and the theoretical importance lies in being one of the rare studies that attempt to collect internal macroeconomic variables which reflects the whole economic performance such as exports and debt External factors, GDP annual growth rate, inflation and population growth and its impact and its relationship to poverty in that group of countries and during the period specified for the study.

The research problem stems from the fact that poverty is one of the most important economic problems, and reducing poverty rates in the Middle East and North Africa region is one of the national goals for each of them, in addition to the actual high rates of poverty in that region, and addressing this problem is through knowing and identifying the most important macroeconomic variables that affect in which then appropriate economic policies can be taken.

As for the research methodology used, Autoregressive Distributed Lag (ARDL) cointegration technique or bound cointegration technique will be applied to know the effect of exports, total reserves (% of total external debt), population growth rate, GDP annual growth rate, and inflation (as independent variables) on the poverty gap (as a dependent variable) by applying it to the countries of the Middle East and North Africa during the period 1990-2021, after applying UNIT ROOT Test, correlation matrix between the study variables will be done, by relying on the data contained in the World Bank for that region (as one block) and not as separate countries and using the E-Views 12 program in the statistical analysis. The same program and the same data are used to study the causal relationship between the independent variables and the dependent variable under study, to determine the nature and direction of the relationship between them over time.

1- Literature Review:

Whereas the current study focuses on exploring the relationship between the evolution of the poverty gap and several macroeconomic variables, as for the relationship between poverty and external debt, many previous studies have dealt with it, Michal Krumer-Nevo & Others(2016), discussed the over-indebtedness of low-income households and its importance to the field of social work ,the study was done as a door-to-door survey in a community with low socioeconomic features, the study's findings show that the participants had a serious debt problem, 61% of the 142 interviewees had past-due debt, and 27% did not have an active bank account, which is a key indicator of financial exclusion. Additionally, a significant danger of financial exclusion is indicated by the abundance of debts per household and the high debt-to-income ratio. Despite this, the results show that the majority of debtors made active attempts to pay off their debts, choosing between two different strategies: attempting to come to a payment agreement with the creditor or repaying the loan by growing their financial resources. Despite being the least effective, the first technique was utilized by the majority of debtors.

Kyoung Tae Kim & Others(2017), using the Survey of Consumer Finances (SCF) from 2007 to 2013 allowed researchers to compare the debt profiles of low-income households before and after the Great Recession. They examined three aspects of debt using Heckman selection models: (a) total debt, (b) debt-to-income ratio, and (c) debt delinquency. Results from the selection stage showed that households were more likely to have debt before and after the Great Recession as their income levels rose (moving them into less severe poverty categories); results from the outcome stage showed that households in the most extreme poverty category (below 100% of the poverty threshold) were less likely to meet the debt-to-income ratio requirements. These low-income households were more likely to experience higher debt levels and debt delinquency issues after the Great Recession.

A fresh worldwide discussion has been ignited by Africa's increasing state debt. ANZETSE WERE(2018), found that concerning the continent's ability to withstand debt. It explains why Chinese loans are particularly appealing to African governments and why African debt is increasing. It comes to the conclusion that the debt trap myth undervalues the capacity of African governments to make important decisions. There are significant exceptions, nevertheless, for African governments. These include how China's Belt and Road Initiative (BRI) may affect African economic plans, how soaring debt may affect African sovereignty, and the complicated effects of corruption.

Glen Biglaiser& Ronald J. McGauvran(2022), assured that despite the International Monetary Fund's (IMF) assertion that one of its goals is to reduce poverty, several research indicates that poverty rates are higher in IMF borrowing nations. They discovered that IMF loan agreements with structural reforms, which typically result in deep and extensive changes that tend to increase unemployment, lower government revenue, increase the cost of essential services, and restructure tax collection, pensions, and social security programs, contribute to more people becoming trapped in the poverty cycle. The findings show how IMF loan terms affect poverty in developing countries and are resistant to various specifications.

OKOYE, Bede Okeoma and OBI Kenneth Onyebuchi(2022), tried to see that socioeconomic metrics like poverty and unemployment have painted gloomy views of Nigeria notwithstanding the rise in state debt. The Central Bank of Nigeria statistical bulletin and the National Bureau of Statistics were used to compile secondary data on public debts (measured by internal and external debts), poverty, and unemployment rates between 1981 and 2021. The study found that neither internal nor external debts had a significant effect on poverty, but they did have an impact on Nigeria's unemployment rates using an unrestricted vector auto-regression model.

On the other hand, many economists dealt with the nexus between poverty and population growth, Dennis A.Ahlburg (1996) argued that there are numerous variables that contribute to poverty. One of these is population growth. The relevance of its role in poverty, however, is far from obvious. Additional children may worsen the health of other children in the family, and population increase has been proven to have overall negative consequences on aspects of poverty, including economic development, land ownership, access to resources located on common property, and maternal health. Overall, the data demonstrate that many nations have been able to eliminate poverty even as their populations have increased, but many other countries have had more difficulty doing so due to population growth.

Seeme – Mallick(2005), The relationship between population increase, the environment, and poverty is generally accepted by all groups, although there is disagreement about whether population expansion is a cause or a consequence and whether measures can be

implemented to reduce the population. There have been ongoing efforts to bring the ideas of ecological and economic sustainability together throughout the 1990s.

ANAH, C. I.(2009), This essay reevaluates the connection between African population increase and poverty. The relationship between the expanding global environment of poverty in Africa and the ever-complicating social processes that affect livelihood on the African continent is used as both quantitative and qualitative evidence. This study pinpoints the cause of poverty in Africa as being distinct from population growth, which should be seen as a benefit to the continent's economy since robots have not yet replaced manual labor there.

For investigating the relationship between the poverty gap and trade in general (exports in specific) Moses Abit Ofeh (2014) found that the relationship between export income, economic growth, and the human development index—a proxy for poverty in Cameroon—was examined. Using Toda-Yamamoto Granger Causality Tests, time series data on the variables in Cameroon from 1965 to 2010 were exploited. There was only a one-way causal relationship connecting the human development index and export-income. Therefore, policymakers should support exports, economic growth, and poverty/human development with solid policies in order to reap the benefits of the empirical causal links in this resource-rich nation. All of this will ensure long-term economic expansion and sustainable development.

While Francis Lwesya(2018), examined the part that export diversification plays in efforts to combat poverty due to the recent expansion of unconventional exports and their anticipated ability to reduce poverty in Tanzania. Growth in real income per capita was utilized as a stand-in for declining poverty. the use of Toda and according to the results of Yamamoto's (1995) causality test model on time series annual data (1980-2015), there is a single direction of causation between Tanzania's development in GDP per capita and horizontal export diversification. It was shown that there was no correlation between vertical export diversification and rising per capita income. Deep horizontal export diversification and vertical export diversification were found to be important determinants in boosting income per capita growth, with lessons learned from East Asia and a few other African nations. To combat poverty, vertical export diversification in East Asia outperformed horizontal export diversification in terms of income per capita increase.

On the other hand, Carlos RodríguezCastelán, Emmanuel Vazquez, and Hernan Winkler (2020) found that there is little concrete evidence of how exports affect local welfare. The analysis provided in this paper provides new evidence on the effects of a major increase in exports on poverty and inequality at the local level using a unique data collection of international trade and poverty maps for over 2,000 Mexican towns between 2004 and 2014. The analysis uses a sector-specific instrumental variable approach that integrates worldwide trends in exports from developing to developed nations with the starting structure of exports among municipalities. Additionally, the impact of rising exports on household earnings was mitigated by declining remittances.

Concerning the relationship between poverty and inflation, Anne Epaulard(2003)in one of the IMF working papers found that very high inflation is usually associated with a higher elasticity of poverty rate to the economic downturn, but at lower inflation, there is no relationship between inflation and elasticity of poverty rate to growth or recession.

Chani & Others(2011), proved the existence of a long-term relationship between the variables of poverty, economic growth, inflation, investment, and trade openness over the period of 1972–2008 is confirmed using the ARDL bound testing approach to co-integration. According to empirical findings, inflation has a beneficial impact. The short-run study shows that economic growth has a negative impact on poverty and inflation has a positive influence.

Mahua Paul and Pooja Sharma(2019), The study comes to the conclusion that the effects of inflation depend on both the commodity and decile class. Furthermore, it has been found that the effects of inflation vary across urban and rural communities. This outlines the function of public policy and government action through the public distribution program favoring the poor part with the purpose of minimizing the impact of inflation gap faced by the rich and the poor.

Then, Chris Loewald and Konstantin Makrelov(2020), found that Inflation has made South Africa's poverty worse. Over the five-year period from 2005 to 2010, the poverty headcount rate increased by 4.5 percentage points when real income was calculated using the poor people's share of overall inflation rather than total inflation.

To investigate the relation between poverty and economic growth, Lonnie K. Stevans and David N. Sessions(2002), discovered that over time, the impact of economic growth on changes in poverty has either decreased or remained constant. For instance, the 1980s U.S. economic expansion had little impact on poverty. We find that gains in economic growth are significantly correlated with declines in the poverty rate for all households using a formal error-correction model. However, it was shown that during the expansionary eras of the 1960s, 1970s, 1980s, and 1990s, growth had a more marked impact on poverty. Other findings include the discovery of factors that influence poverty rates' dynamic behavior throughout the short- and long-term.

Richard H. Adams, Jr(2003), found that economic growth is an important means of reducing poverty in the developing countries only when the economic growth measured by GDP percapita.

Hyun H. Son and Nanak Kakwani(2004), The study makes a number of claims to show that the early stages of economic development and income inequality can have a big impact on reducing poverty by using the concept of poverty elasticity, which measures how much economic growth reduces poverty. It also shows that the trade-off between growth and inequality can be justified in terms of the original circumstances of inequality and development. The paper's theoretical elasticities are then used to calculate the growth rates needed in several Asian nations to meet the Millennium Development Goal of reducing the incidence of poverty between 1990 and 2015.

Abigail McKnight(2019), suggests that the relationship between inequality and growth may not be linear, with very low and very high levels of inequality being detrimental to growth, but a range in between where the relationship is unclear, which may help reconcile some of the contradictory findings.

Valerie Cerra, Ruy Lama and Norman Loayza(2021), found that evidence indicates that growth can be useful in decreasing poverty, but the effect on inequality depends on the underlying drivers of growth. Similar ambiguity surrounds the relationship between poverty and inequality and growth, which is mediated by a number of pathways. However, the majority of credible explanations contend that poverty and inequality slow growth, at least over the long term.

Causes of continuing poverty were discussed by Brian Van Arkadie and Raymond Mallon(2023), they argued that according to government statistics, about one-third of Vietnamese citizens live in poverty; Numerous facts connected to persistent poverty and relative exclusion from the advantages of economic growth have been discovered through analysis of the poverty problem. They examined poverty in both urban and rural settings, in hilly, rural, and isolated places where the population is vulnerable to the effects of natural disasters, many poor people live in areas with scarce natural resources and hard environmental circumstances.

Although there is less poverty in urban areas, growth's benefits are still not distributed equally, and lack of access to social services is correlated with poverty.

Hence, the issue of poverty and its macroeconomic determinants has been addressed in several previous studies, the current study differs in that it examines the relationship between several macroeconomic variables that were not addressed together in previous studies. It also differs in temporal and spatial framework, as it deals with the application of the Middle East and North Africa region during the period 1990-2021.

2. Data and methodology

2.1. Data

Table 1 below defines the variables to study, the definition of the variables used in the analysis is recorded in Table 1. The data used in the regression were gathered from the world bank tables. It's selected annual data that cover the period 1990-2021. The selected sample includes all MENA region countries as one block. The analysis was performed using EVIEWS 12.

Table 1: Economic variables included in the model.

Name	Code	definition	Source
Poverty gap at \$3.65 a day (2017 PPP) (%)	POV	The poverty gap at \$3.65 a day (2017 PPP) is the mean shortfall in income or consumption from the poverty line \$3.65 a day (counting the nonpoor as having zero shortfall), expressed as a percentage of the poverty line. This measure reflects the depth of poverty as well as its incidence.	World Bank statistics
Exports of goods and services (% of GDP)	EXPOR	Exports of goods and services represent the value of all goods and other market services provided to the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services. They exclude compensation of employees and investment income (formerly called factor services) and transfer payments.	World Bank statistics
Total reserves (% of total external debt)	RESDEB	International reserves to total external debt stocks.	World Bank, International Debt Statistics.
Population growth (annual %)	POP	Annual population growth rate for year t is the exponential rate of growth of midyear population from year t-1 to t, expressed as a percentage . Population is	World Bank statistics

		based on the de facto definition of population, which counts all residents regardless of legal status or citizenship.	
Inflation, consumer prices (annual %)	INF	Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used.	World Bank statistics
GDP growth (annual %)	GDPGROWTH	Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2015 prices, expressed in U.S. dollars. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for the depreciation of fabricated assets or for the depletion and degradation of natural resources.	GDP growth (annual %) Data (worldbank.org)

Source:

<https://databank.worldbank.org/reports.aspx?source=2&series=NY.GDP.DEFL.KD.ZG&country=>

2.2: Methodology

This research is an attempt to study the nexus between some macroeconomic variables and the poverty gap in the (MENA) region during the period 1990-2021, the research will apply a comparable model to that of Muhammad Irfan Chani, Zahid Pervaiz, Sajjad Ahmad Jan, Amjad Ali, and Amatul R. Chaudhary(2011), the model is stated as follows:

$$Y_{it} = \alpha + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \epsilon_{it} \quad (1)$$

Where Y_{it} is the dependent variable (Poverty Gap), α is the intercept, β_1 represents the partial coefficients for the independent variables X_{1t} (Exports of goods and services (% of GDP)), X_{2t} (Total reserves (% of total external debt)), X_{3t} (Population growth (annual %), X_{4t} refers to Inflation, consumer prices (annual %), and $\beta_5 X_{5t}$ refers to GDP annual growth rate.

3. Empirical Results & Discussion:

3.1. Descriptive Statistics

The descriptive statistics provide quantitative insights into the selected data series. Table(2) below presents the central measures and the standard deviation. The results show a positive mean of all the selected variables over the study period. Yet, a high standard deviation presents in the highest value in X_{2t} (Total reserves (% of total external debt)) variable, compared to the other variables used in the model.

In general, there are three steps to be followed according to the methodology of studying time series: The unit root test to determine the degree of integration, the co-integration test between this series, and the correlation test. In this study, these three standard steps were followed according to Enders (1995) for the following reasons: 1st, to ensure that all variables under study are stationary whether at the levels or at the first differences (unit root test), 2nd, to identify the possibility of complementarity relationships between variables in the long run (cointegration tests), further Autoregressive distributed lags (ARDL) model will be applied, as This model takes sufficient numbers of lags to capture the data generating process in a general-to-specific modeling framework.

Table(2) Descriptive Statistics

	EXPOR	GDPGRO WTH	INF	POP	POV	RESDEB
Mean	40.4621	3.74945	3.81158	2.13420	5.0656	89.4047
Median	39.1478	3.93588	3.11361	2.0966	5	77.7976
Maximum	51.4791	13.1425612	11.2706	3.556	8	190.2988
Minimum	28.9231	-3.5240	0.67225	1.29190518	2.8	13.94542028
Std. Dev.	6.13719	2.72450	2.5692	0.4008	1.5453	56.6552
Skewness	0.16703	0.74792	1.27637	1.1958	0.1866	0.4419
Kurtosis	2.04977	6.7914	3.88533	6.8033	1.9736	1.82196
Jarque-Bera	1.35272	22.1501	9.7337	26.9137	1.5904	2.89198
Probability	0.50846	1.5493	0.00769	1.4314	0.45148	0.2355
Sum	1294.7872	119.9825	121.9706	68.2945	162.1	2860.95145
Sum Sq. Dev.	1167.6191	230.1107	204.6300	4.9819	74.0321	99504.5104
Observations	32	32	32	32	32	32

Source: Calculated by the researcher using E-views 12, and world bank data

3.2. Unit Root Test:

Table(3): Unit Root Test Results Augmented Ducky- Fuller

Variables	Level		1st difference With Intercept
	Test	Prob	Prob
POV	ADF	0.000004	0.0001
Expo	ADF	3.3223	0.0003
Resdeb	ADF	0.00000	0.0000
POP	ADF	<u>0.1294</u>	0.005443
INF	ADF	<u>0.0000</u>	0.0000
GDPGROWTH	ADF	-8.977990	0.0000

Source: Calculated by the author, using WB data, and applied with E-views12

A unit root test is applied to check the stationarity of the time series and to determine the order of integration of the data, Null Hypothesis: Pov, Expo, Resdeb, POP, INF, and GDPGROWTH variables has a unit root. So, the results of the unit root test in the first difference allow us to reject the null hypothesis of the presence of a unit root among the variables, as summarized in table(3) above.

3.3. Correlation Matrix:
Table (4) Correlation Matrix

	EXPOR	GDPGROWTH	INF	POP	POV	RESDEB
EXPOR	1	0.1772	0.1192	0.1058	-0.6156	0.7704
GDPGROWTH	0.1772	1	0.3848	0.6133	0.0270	-0.1001
INF	0.1192	0.3848	1	0.7139	0.2583	-0.13310
POP	0.1058	0.6133	0.7139	1	0.2257	-0.1524
POV	-0.6156	0.02704	0.2583	0.2257	1	-0.8110
RESDEB	0.7704	-0.1001	-0.13310	-0.1524	-0.8110	1

Source: Calculated by the author, using WB data, and applied with E-views12

Table No. (4) shows the correlations between the variables of the study, as it showed the existence of an inverse relationship between the poverty gap and exports, meaning that with every increase in exports in the countries under study, poverty rates decrease, which is consistent with economic theory.

In inconsistency with the economic theory, the results show a positive sign between poverty and GDP economic growth, meaning that both variables go in the same direction, this may reflect that even when there is economic growth it's not reflected in reducing poverty in the MENA region people.

The table also shows that there is an inverse relationship between the poverty gap and the foreign reserve/external debt, meaning that with every increase in the reserve-to-debt ratio, poverty rates decrease, which is also consistent with economic theory.

The results also confirmed the existence of direct negative impact of increasing the rate of population and the rate of inflation on the poverty gap which is also consistent with economic theory.

3.4. ARDL Model Results and Discussion:

ARDL cointegration technique does not require pretests for unit roots, unlike other techniques. Consequently, the ARDL cointegration technique is preferable when dealing with variables that are integrated of a different order, I(0), I(1), or a combination of both and, robust when there is a single long-run relationship between the underlying variables in a small sample size. The long-run relationship of the underlying variables is detected through the F-statistic (Wald test). In this approach, the long-run relationship of the series is said to be established when the F-statistic exceeds the critical value band. The major advantage of this approach lies in its identification of the cointegrating vectors where there are multiple cointegrating vectors.

However, this technique will crash in the presence of an integrated stochastic trend of I(1) (Emeka Nkoro and Aham Kelvin Uko, 2016).

Cointegration is tested using ARDL through the method of “limit testing”. Test Bound" developed by al. et Pesaran (2001), where models were incorporated Model Autoregressive (AR, p) and distributed lag models Model Lag Distributed. In this method, the time series is a function of slowing down its values and the values of the explanatory variables present and decelerated by one or more periods.

Null hypothesis :, H0: there is no cointegration

Alternative hypothesis, H1: there is no cointegration

Table(5): ARDL (PMG) Test Results

Dependent Variable: POV

Method: ARDL

Date: 05/27/23 Time: 10:54

Sample (adjusted): 1993 2021

Included observations: 29 after adjustments

Maximum dependent lags: 3 (Automatic selection)

Model selection method: Akaike info criterion (AIC)

Dynamic regressors (3 lags, automatic): EXPOR RESDEB POP

INF

GDPGROWTH

Fixed regressors: C

Number of models evaluated: 3072

Selected Model: ARDL(2, 3, 3, 3, 3, 3)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
POV(-1)	0.5449	0.13465	4.0471	0.006747836138086838
EXPOR	-0.0345	0.0549	-0.6290	0.5524688904813261
RESDEB(-2)	-0.1473	0.03028	-4.8647	0.002808630277674603
POP	0.4713	1.8947	0.24875	0.8118425169550862
INF	0.2023	0.0837	2.4156	0.05217159577744704
GDPGROWTH	-0.2086	0.0768	-2.714	0.03488587699984855
GDPGROWTH(-2)	0.1207	0.0928	1.301	0.2407913937522922
C	2.3976	4.4555	0.538	0.6098510112372319
R-squared	0.9811	Mean dependent var		4.820689655172414
Adjusted R-squared	0.9119	S.D. dependent var		1.401371601157958
S.E. of regression	0.4159	Akaike info criterion		1.093990668911588
Sum squared resid	1.0379	Schwarz criterion		2.178397706487067
Log likelihood	7.1371	Hannan-Quinn criter.		1.433613424222146

F-statistic	14.1762	Durbin-Watson stat	3.149955366613805
Prob(F-statistic)	0.00166		

Source: Calculated by the author, using WB data, and applied with E-views12

The previous results indicate that the independent variable chosen in the model explains approximately (98%) of the changes in the dependent variable. The results also indicate the possibility of rejecting the null hypothesis, meaning that there is no cointegration between the variables, the long-run relationship of the series is said to be established when the F-statistic exceeds the critical value band.

Chart No(1) The correlation between poverty gap and: Exports, Reserves to External debts, Inflation, Population, and GDP Annual growth rate



Source: WB data, and applied with E-views12

The results here also confirm the validity of the correlation coefficients that we reached in the correlation matrix, where: There is an inverse relationship between exports and the poverty gap in the countries under study in the long term, as poverty rates rise with low rates of exports in those countries.

And after (2) lagged periods, there is an inverse relationship has also been confirmed between the reserves ratio to the external debt, and the poverty gap, meaning that with the

decrease in the reserves to external debts ratio, the poverty gap also rises in the countries under study.

The negative impact was confirmed between inflation rates and poverty rates in those countries.

On the other hand, the long-term positive relationship between population growth rates was confirmed. between the poverty gap, these results are consistent with the economic theory as well as with all previous studies that were dealt with in the same field.

The study confirmed that after (1) lag period GDP growth negatively affects the poverty gap, thus with an increase in the GDP the poverty also increases, but after (2) lag periods the study confirmed the positive impact of GDP growth on the poverty gap, maybe this result reflects the slow response of the economic policies to the economic macroeconomic performance in the MENA region during the period 1990-2021.

Conclusions:

In the short and long run, the study confirmed that the increasing rate of inflation had an adverse impact on poverty rates in the countries of the Middle East and North Africa during the period 1990-2021, this result matching with Anne Epaulard(2003), Chani & Others(2011), and Chris Loewald and Konstantin Makrelov(2020).

Consistent with Glen Biglaiser& Ronald J. McGauvran(2022) this study confirmed that in the short and long run the decreasing ratio of reserves to external debt has a negative impact on the poverty rates in the countries of the Middle East and North Africa during the period 1990-2021

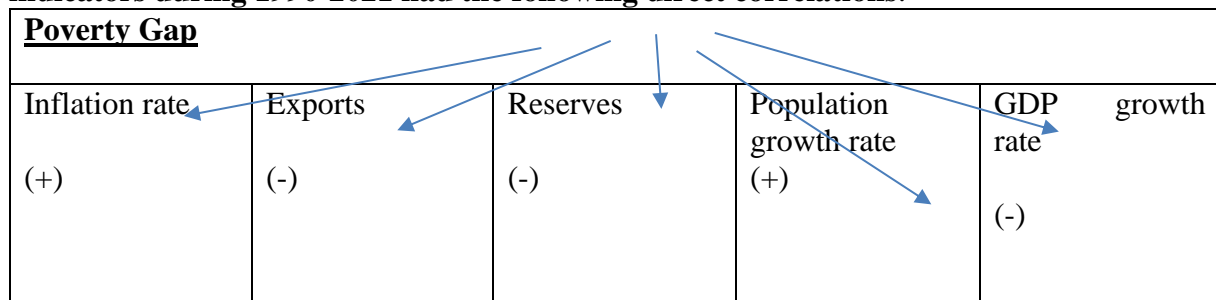
Concerning the relationship between poverty and exports, the study confirmed that in both the short and long run, the increasing exports had a positive impact on decreasing poverty in MENA region, this is consistent with Moses Abit Ofeh (2014), Carlos RodríguezCastelán, Emmanuel Vazquez, and Hernan Winkler (2020)

While the increasing population growth rate is associated with a direct negative impact on the poverty gap in those countries, it has the highest influence compared to the other macroeconomic variables. The relationship between them goes in the same direction, this result matching with Dennis A.Ahlburg (1996), Seeme – Mallick(2005), and ANAH, C. I(2009).

The study confirmed that after (1) lag period GDP growth negatively affects the poverty gap, thus with an increase in the GDP the poverty also increases, but after (2) lag periods the study confirmed the positive impact of GDP growth on the poverty gap, this result matching with Abigail McKnight(2019) and Valerie Cerra, Ruy Lama and Norman Loayza(2021).

In brief, the poverty gap in MENA countries and the selected macroeconomic indicators during 1990-2021 had the following direct correlations:

Poverty Gap				
Inflation rate (+)	Exports (-)	Reserves (-)	Population growth rate (+)	GDP growth rate (-)



Policy Recommendations:

The results of the study confirmed that inflation, reserves/external debt, exports, and population growth are among the most important macroeconomic variables that affect poverty and in the same direction assumed in economic theory. This means that reducing poverty rates in those countries in line with the goals of the United Nations for sustainable development requires the following: Applying economic policies that will reduce inflation rates by using fiscal policy tools through reducing government spending or raising tax rates with supporting poor people, raising export rates through an industrial and agriculture policy that supports the quality and competition of local products in global markets, as well as raising the reserve ratio to the total external debt, which may occur in the event of an improvement in export rates accordingly. It also requires population policies that reduce population growth rates. Finally, economic growth couldn't reduce poverty without economic policies raising the equality degree between individuals

Declaration of conflicting interests:

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