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Unpacking the Phillips Curve in the Mena Region (Excluding High-Income Countries): Trends and Implications for Policy in the Period 1990-2022

Fatma Ahmed Hassan[1]

Abstract

The effects of inflation and unemployment are particularly severe in developing and impoverished nations because wealthy nations can afford to compensate their citizens with tax breaks, unemployment benefits, and other benefits, while poor and developing nations are unable to do so. Therefore, this study aimed to ascertain the degree to which the Phillips curve covers the Middle East and North African (MENA) countries and noted that high-income countries were not included in this analysis due to the previously stated reasons. The ARDL model was created to examine the effects of inflation and unemployment on the economic growth rate. Statistics published in the World Bank database during the period 1990–2022 were used. The Granger model's causal relationship was examined using the E-Views12 program. All findings support the absence of a Phillips curve in those nations, ARDL model results were in line with the Granger causality results. This is in line with the findings of (Tarek Kacemi and Sal-lahuddin Hassan:2018) and (Muhammad Azam, Rasheed Khan, and Saleem Khan:2021). The results also demon-strate a negative relationship between unemployment and GDP growth rates which is consistent with economic theory, between the rate of inflation and economic growth. This finding validates historical labor market distor-tions in these nations and highlights the need for different labor policies that are appropriate for each nation's circumstances and compatible with economic variables. Meanwhile, those nations can adopt economically con-sistent measures to address inflation, such as raising taxes, cutting back on spending, or adopting other customary measures.

Keywords: *Inflation; Unemployment; Philips curve-; GDP growth rate; MENA.*

Introduction

Unemployment and inflation are two extremely important macroeconomic indicators that greatly influence economic stability and economic growth. Every government strives to achieve a low level of unemployment and inflation and a high level of economic growth. According to the economic theory known as the Phillips curve, unemployment and inflation have a steady and inverse relationship. Created by William Phillips, it contends that inflation follows economic expansion and should therefore result in increased employment and decreased unemployment. High unemployment means a higher supply than demand for jobs, and consequently, employers are not stimulated to increase wages, stable and low wages do not further impose any pressure on prices, and inflation remains low. On the contrary, low unemployment is related to the greater demand than supply of jobs, which will boost the salary and increase the production costs and the overall demand in the economy. Ultimately, that will cause higher inflation in the economy.

This study aims to check the relationship between unemployment and inflation and their impact on economic growth in MENA "Middle East and North African countries (Excluding the high-income countries) during the period 1990-2022, by knowing the extent to which the economic reality matches the economic decline in the countries affected by testing the extent to which Phillips' hypothesis is true or not in this group of countries. This is to reach results that show the suitability of the macroeconomic policies followed in those countries to deal with the problems of inflation and unemployment, to achieve a reasonable rate of economic growth, or whether they need different tools to deal with these problems, which in turn positively affect many macroeconomic variables, such as the rate of economic growth.(Fatma A Hassan:2023)

The research problem arises from the fact that the Middle Eastern countries under study suffered from high rates of unemployment in general during the study period, and they also suffered from high rates of

[1] Assistant Professor in Economics, Princess Nourah bint Abdulrahman University, KSA, ORCID ID: 0000-0001-6286-8567, Email: famohamed@pnu.edu.sa.

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inflation, which negatively affected the purchasing power of consumers, real wages fell, and poverty rates rose. The Phillips curve assumes that as inflation rates rise, they decrease unemployment rates and vice versa true, except that what happened in the case of the Middle Eastern countries under study is an increase in inflation with an increase in unemployment. Then the negative effects multiplied and the problem suffered by a wide segment of individuals and real economic growth was exacerbated.

As for the study methodology, statistics published in the World Bank database on unemployment, inflation, and economic growth in the Middle East and North African countries (Excluding the high-income countries)during the period 1990-2022 will be used. The E-Views12 program will also be used to examine the causal relationship according to the Granger model, and a multiple linear regression model will also be built to investigate the impact of both unemployment and inflation on the economic growth rate in the countries under study.

The study adopted two main research hypotheses:

- Ho: The relationship between inflation and unemployment in the Middle Eastern countries under study didn't match the Phillips curve hypothesis.

- H1: The relationship between inflation and unemployment in the Middle Eastern countries under study matches the Phillips curve hypothesis.

Literature Review

Numerous empirical investigations on the Phillips curve have been conducted. For instance, King (1994) computed a long-term trade-off for the US post-war era and a negative association between inflation and unemployment in economic cycles. The curve's shape was the subject of numerous research after that. The 1958 Phillips curve was concave in its initial form. Gordon (1998), Staiger, Stock, Watson (2001), and Eliasson (2001) all assume that the US Philipps curve is linear.

Numerous other researchers (Clark, Laxton & Rose:1996; Akerlof & Yellen, 2006; Stiglitz, 1997; Eisner, 1997 and Stimel, 2009) have also come to the same conclusion: the US Phillips curve is concave. In addition, they verified that employment is negatively impacted by inflation and that the long-run Philipps curve is vertical over time, a five percent increase in the rate of inflation would result in a 1.5 percent increase in the rate of unemployment. Moreover, the existence of the Philipps curve was established for numerous nations. Take North Cyprus's long- and short-term curves, for instance (Shahbaz et al., 2012). There may also be a cyclical relationship between unemployment and inflation that is related to business cycles since both variables respond to cyclical swings.

Ho: The relationship between inflation and unemployment didn't match the Phillips curve hypothesis:

(Maximova Alisa:2015) To determine whether the Phillips curve is useful in the economy, she examined pertinent statistical information regarding inflation and unemployment using the Russian example by analyzing data for 1999-2015, the author concludes that the current Russian situation does not fully fit the Phillips curve. It must first go through a stabilization phase, which could take up to ten years before we can discuss full employment metrics and economic stability.

(Florida Veljanoska:2019) carried out an empirical study to ascertain the reciprocal influence between inflation and unemployment, using the econometric program E-Views 9.5, the years 1993–2018 were covered by the analysis, and the information was gathered for the Republic of Macedonia. Both the Granger Causality Test and the Johansen Co-integration Test have been run. The findings indicate that there is just one co-integration and no Granger causal relationship between the variables. As a result, it is impossible to forecast future inflation values using historical unemployment data, and vice versa. Moreover, the study

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provides proof that Macedonia does not fit the Phillip curve and that determining the values of one variable by its rate is not possible.

In their paper "Inflation dynamics analysis in selected MENA countries during 1990–2016," Tarek Kacemi and Sallahuddin Hassan (2018) use the new Keynesian Phillips curve (NKPC) to analyse the 1990–2016 timeframe for a few selected MENA countries. Fully Modified Ordinary Least Square (FMOLS) and Pooled Mean Group (PMG) estimation approaches were applied for the empirical study in this paper. The concept of a short-run Phillips curve illustrating the trade-off between inflation and unemployment was not found among the selected MENA countries.

The applicability of the Phillips curve for eight MENA (Middle East and North Africa) countries—Algeria, Egypt, Jordan, Kuwait, Malta, Morocco, Saudi Arabia, and Tunisia—was examined by (Muhammad Azam, Rasheed Khan, and Saleem Khan:2021) between 1991 and 2019. Owing to the nature of the data, the panel autoregressive distributed lag/pooled mean group (ARDL/PMG) estimation is used. The results indicate that, among the panel of eight MENA countries, there is a negligible but negative short-term correlation between these two variables and no trade-off between inflation and unemployment rates in the long run. As a result, it is concluded that there is insufficient evidence to support the trade-off between inflation and unemployment rates in MENA countries.

(Jamiu Oluwatosin Lawal: 2023) employ Augmented Dickey Fuller (ADF) and time series data for the Nigerian economy for the years 1986–2021. The time series properties results show that the variables are combinations of both I(0) and I(1) in the same specification, which prompts the usage of autoregressive distributive lags (ARDL), developed by Pesaran et al. (2001). Granger causality was also employed to search for a causal relationship. The results show that, over the long run, unemployment has a significant positive impact on inflation. This shows that the trade-off between inflation and the unemployment rate in Nigeria is not long-term sustainable, as the Philips curve illustrates. Furthermore, the data indicates that there is no correlation between Nigeria's unemployment rate and inflation.

(Peter Mwai Kinuithia:2022) empirically assess the Philips curve's relevance to the Kenyan economy. and examined the short- and long-term results using the Auto-Regressive Distributed Lag (ARDL) and Error Correction Model (ECM). The research sample was the annual secondary time series data set spanning 30 years, from 1991 to 2016. According to the study's findings, there was a slight but favorable correlation between unemployment and inflation over the long run.

(Johanna Pangeiko Nautwima, and Asa Romeo Asa:2021) using semi-annual time series data, experimentally verify the Phillips Curve's applicability in Namibia since independence found that the results of the unit root tests suggest that the variables were stable in their level forms, suggesting the lack of an enduring partnership. To assess the short-term association between the variables, the Ordinary Least Square (OLS) model was used. The OLS analysis's findings confirm that there is a bidirectional relationship between unemployment and inflation in Namibia's economy.

(Cristian Constantin Popescu and Laura Diaconu:2022) examined how the G7 countries' economic policies have affected the evolution of unemployment and inflation, beginning with the monetary critique of the ineffectiveness of monetary impulses. The established econometric analysis seeks to determine the presence and direction of the short- and long-term nexus between variables to accomplish this goal. by the use of cointegration and causality techniques, such as the Granger, Granger-Wald, and Johansen tests. the results show an inverse relationship between the unemployment rate and the inflation rate in the G7 states over the studied period, providing short-term support for the Phillips model. Long-term data, however, suggests that unemployment and inflation may coexist, which enables us to concur with monetarist beliefs.

(Augustinus Mangasa Sipahutar, 2021) This study uses a VAR model to analyze the Phillips curve in Indonesia from 1990 to 2019 in order to evaluate whether there is a constant trade-off between a strictly negative link between inflation and unemployment in the near run and whether the coefficient of anticipated inflation is positive. The analysis's findings show that inflation is expected to be negative, indicating that the relationship between inflation and unemployment is not strictly downward in the near future.

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H1: The relationship between inflation and unemployment matches the Phillips curve hypothesis:

As of (Muchdie:2016) regression analysis has been applied to data from Australia (1980–2015), South Korea (1980–2015), and Indonesia (1995–2015) to demonstrate the long-term existence of the Philips curve. The Phillips curve demonstrated the negative correlation between the rate of inflation and the jobless rate. Every government has encountered this dilemma frequently. It is not possible to significantly lower moderate unemployment without raising the possibility of inflation, and it is not possible to completely abolish inflation without momentarily raising unemployment. The results show that there is a negative correlation between the rate of inflation and the unemployment rate. It suggests that even though there was no statistically significant association between them, the Philips curve has been present in the economy over time.

(Mohd Shahidan Shaari et al: 2018), intended to use panel data analysis to look into the Phillips curve's existence in high-income countries between 1990 and 2014. The study's most intriguing conclusion is that there is a bidirectional association between the rate of inflation and unemployment in both brief and lengthy runs. Thus, governments ought to decide whether to lower the unemployment rate or stabilize the inflation rate. So some high-income nations, like the United States in the 1970s, were unable to prevent stagflation, which is characterized by simultaneous high rates of inflation and unemployment. The Phillips curve is not applicable in this case.

(Pratinidhi& NMP Verma:2020) tried to make a macroeconomic study about the theoretical relationship between inflation and unemployment, by using a polynomial regression model to analyze the Phillips curve's shape and a graphical representation from 1991 to 2015; additionally, it is added to the recent slowdown that occurred in India from January to October of 2018. The study concludes that the Indian economy has a short- or long-term Phillips curve relationship between 1991 and 2015, as indicated by the graphical representation of the Phillips curve shape.

(Obed I. OJONTA: et al., 2022) produced panel data for 26 Sub-Saharan African countries for the years 2009–2016 using the Generalized Method of Moments (GMM) technique in dynamic systems for analysis. The study helps to illustrate how unemployment and inflation rates are traded off. Due to reasonable assumptions for the rates of inflation and unemployment, the estimated results show the positive validity of the improved Philips curve. However, when the output gap is used as a proxy for the unemployment rate, the validity of the enlarged Philips curve is questioned. The theory is untrue. The result also shows that rational expectations of inflation rate with the augmented Philips curve hypothesis have a positive and significant influence on the inflation rate in Sub-Saharan African countries.

(Muhammad Mustafa and Matiur Rahman:2017) looked at the trade-off between unemployment and inflation rates in the US as indicated by the classic Philips curve. The research uses yearly data spanning from 1930 to 2016. The sequence of integration of the variables in levels of analysis, along with the two effective unit roots tests, DF-GLS and Ng-Perron, are the methods utilised for ARDL Bounds Testing. The estimations from the ARDL Bounds test validate co-integration between the variables stated above. While modest in the short term, the error-correction model (ECM) calculations unequivocally confirm to the long-term traditional Philips curve. However, evidence suggests that the variables have a short-term interaction feedback effect.

(Ali Irushad:2023) examined if the Phillips curve exists and is stable in the Maldives case study, using quarterly data from Q1 1991 to Q4 2014. The GDP, the unemployment rate, and the inflation rate are among the study's factors. Using the ADF unit root test, it is found that every variable is integrated to order I (1). Using the bound testing approach to long-run cointegration within the ARDL framework, examine the long-term connection between the variables, and using the Error Correction Model (ECM), the study investigates the dynamic relationship between variables in the short term. Using this approach, it found a long-term relationship between unemployment, inflation, and the gross domestic product. There is a strong, persistently negative correlation in the Maldives between the rate of unemployment and inflation. The Philips curve connection in the Maldives is stable, according to the results of the recursive residual, CUSUM, and CUSUMsq tests that we conducted to assess the stability of the model.

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The link between the long- and short-term Phillips curves of the Czech Republic is examined in (Lu Wang et al., 2022). For this, data from 1993 to 2018 on the rates of inflation and unemployment are used. The associated parameters were subjected to a regression analysis using SPSS statistical software to determine the proper values. It is found that the long-term relationship is an irregular circular curve that moves in a clockwise direction, whereas the short-term relationship is mutually substitutive.

(Jelena Dimovski et all:2024) Analyzed the inverse relationship between inflation, unemployment, and economic growth empirically to see how they are related between the first two and evaluating Okun's law's applicability for the sample of Western Balkan (WB) nations and the EU overall. Panel data for the years 2006–2021 that were accessible on World Bank platforms were used. The study's conclusions validate the trade-off between unemployment and inflation for each of the countries under investigation (Serbia, Bosnia and Herzegovina, Montenegro, with the exception of North Macedonia, Albania) and the EU.

(Nasrin Khatun:2023) Analyzed the given macroeconomic statistics (unemployment, inflation) for Bangladesh. The Augmented Decay-Fuler Test is used to check stationarity, while the Jarque-Bera test is used to check normalcy. The Granger Causality test demonstrates that unemployment does not cause inflation, and the forecasting result demonstrates the existence of an inverse Philip Curve link between Bangladesh's unemployment rate and the inflation rate.

(Suna Korkmaz and Muzhgan Abdullazade: 2020) investigated whether there is a relationship between the unemployment rate and inflation in nine randomly selected G6 countries (Australia, Brazil, Canada, France, Germany, Italy, the Russian Federation, Turkey, and the United Kingdom) using data from the period 2009–2017 and a panel causality test. Research indicates that when efforts are taken to prevent inflation, unemployment occurs in the economy.

The nature of the short- and long-term dynamic causal linkages between inflation and unemployment in the ASEAN-10 from 1989 to 2018 is experimentally investigated in (Nurul Lisani, Raja Masbar, and Vivi Silvia: 2020). Based on the panel cointegration test, the study demonstrated that there is a long-term equilibrium between inflation and unemployment. Using the Vector Error Correction Model (VECM) technique, the study found no significant correlation in the short term between inflation and unemployment. Conversely, inflation is found to have a positive long-term effect on unemployment.

This research is considered a scientific addition to the field of studies on the extent to which the Phillips curve is achieved in practice, as there are no previous studies in this field that address the countries under the current study and the time range of the study, therefore it is expected to be a theoretical addition to the literature in this field. From a practical standpoint, the current study is also considered a scientific addition, as it provides many recommendations to policymakers based on the resulting results.

Model, Methodology, and Data Description

Model and Methodology

This study uses annual data covering the years 1990–2022, excluding high-income nations, to objectively verify the existence of the Philips Curve in the Middle East and North African countries. The thirteen nations listed in Table (1) comprise the selected sample. EVIEWS 12 was used for the analysis. Following the technique of Jamiu Oluwatosin Lawal (2023) and Muhammad Azam, Rasheed Khan, and Saleem Khan (2021), the study initially examines a linear framework, which is characterized by the model that follows:

$$\boldsymbol{Y_{it} = \alpha + \beta 1 X_{1t} + \beta 2 X_{2t} + \varepsilon_{it}} \qquad \textbf{(1)}$$

Where $\boldsymbol{Y_{it}}$ is the independent GDP growth rate in the countries under the study, $\boldsymbol{\alpha}$ is the intercept, β1 represents the partial coefficients for the first dependent variable $\boldsymbol{X_{1t}}$ which refers to the inflation rate, and β2 represents the partial coefficients for the sconed dependent variable $\boldsymbol{X_{2t}}$ which refers to the unemployment rate.

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Table (1) Middle East and North African countries (Excluding the high-income countries)

Algeria	Djibouti	Egypt, Arab Rep.	Iran, Islamic Rep.	Iraq
Jordan	Lebanon	Libya	Morocco	Syrian Arab Republic
Tunisia	West Bank and Gaza	Yemen, Rep.		

Source: https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=XQ

Table 2: Economic variables included in the model

Name	Code	Definition
Unemployment, total (% of total labor force) (modeled ILO estimate)	Unemp	Unemployment refers to the share of the labor force that is without work but available for and seeking employment.
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.
GDP growth (annual %)	GDP	GDP growth rate expressed in annual percentage terms at market prices calculated using constant local currency. US dollar-denominated constant prices from 2015 serve as the basis for the aggregates. Gross domestic product (GDP) is the total of all resident producers' gross value added, plus product taxes and subtracted from any subsidies not factored into product values. The depreciation of artificial assets and the depletion and degradation of natural resources are not taken into account in its computation.

Source: https://data.worldbank.org/indicator/SL.UEM.TOTL.ZS

Data Description

The descriptive statistics provide quantitative insights into the selected data series. Table(3) below presents the central measures and the standard deviation. The number of observations (33) starting in 1990 to 2022. The results show a positive mean of all the selected variables over the study period. Yet, a high standard deviation presents in unemployment compared to the other variables used in the model.

Table 3: Descriptive Statistics

	GDP	INF	UNEMP
Mean	3.5407	5.6650	12.01286
Median	3.6828	4.32135	12.0192
Maximum	11.8853	14.51233162	13.3552
Minimum	-3.2088	1.557907113	10.3504
Std. Dev.	2.8399	3.8538	0.81058
Skewness	0.27645	1.08811	-0.3389
Kurtosis	4.23890	2.71980	2.44925
Jarque-Bera	2.53084	6.61985	1.04884
Probability	0.28212	0.03651	0.59189

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Sum	116.8432	186.9474	396.4246
Sum Sq. Dev.	258.092	475.2680	21.0257
Observations	33	33	33

Source: Calculated by the author using WB data and E-views-12

Results and Discussion

Granger Causality Test

Table (4) and chart (1) below indicate that no Granger causal relationship between inflation and unemployment in the Mena Region (Excluding High-Income Countries) During the Period 1990-2022. As a result, it is impossible to forecast future inflation values using historical unemployment data, and vice versa in this group of countries, so we can conclude that the Philips curve does not exist in these countries from 1990 to 2022.

Table 4- Granger Causality Test Result

Pairwise Granger Causality Tests
Sample: 1990 2022 Lags: 2 Date: 05/23/24 Time: 12:07

Null Hypothesis:	Obs	F-Statistic	Prob.
UNEMP does not Granger Cause INF	31	0.57204	0.5713
INF does not Granger Cause UNEMP		1.35950	0.2744

Null Hypothesis:	Obs	F-Statistic	Prob.
INF does not Granger Cause GDP	31	0.08732	0.9167
GDP does not Granger Cause INF		0.02922	0.9712

Null Hypothesis:	Obs	F-Statistic	Prob.
UNEMP does not Granger Cause GDP	31	0.46336	0.6343
GDP does not Granger Cause UNEMP		0.11162	0.8948

Source: Calculated by the author using WB data and E-veiws-12

Table (4) and chart (1) also indicate that there is no Granger causal relationship between inflation and GDP in the Mena Region (Excluding High-Income Countries) for the same period. The same result applies to the causal relationship between unemployment and GDP. Therefore, growth rates cannot be expected

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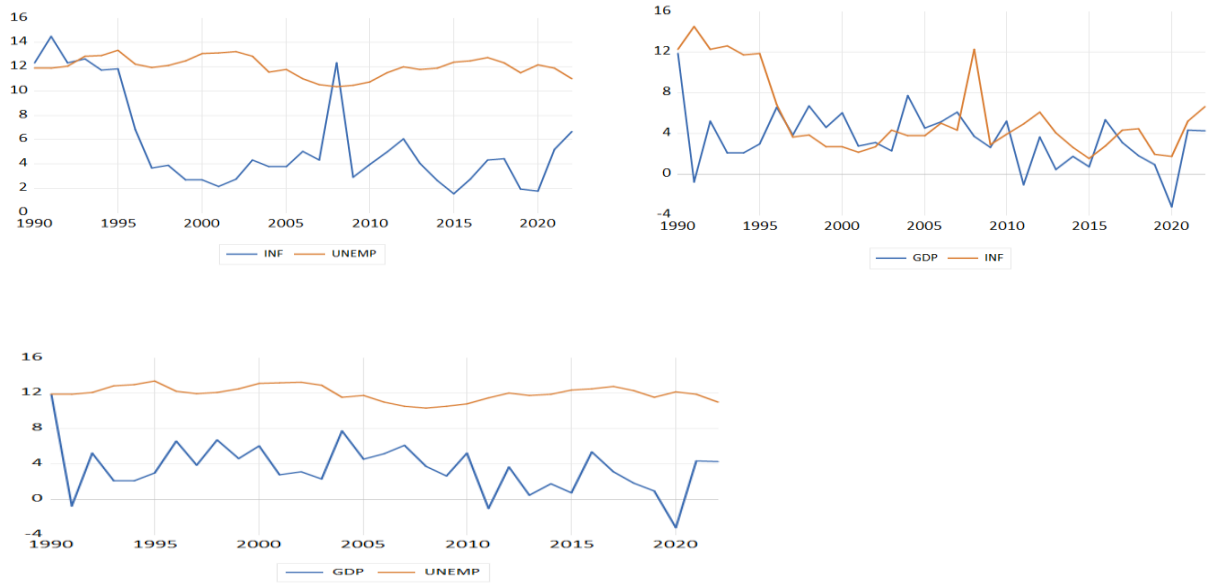
based on unemployment rates or inflation rates in those countries, which contradicts economic theory and reflects market distortions and the lack of success of economic policies in those countries under study.

Chart No (1)



Correlation Matrix Result

In order to facilitate the examination and contrast of sample nations, the ARDL technique takes cross-sectional dependency into consideration. Data accessibility dictates both the sample size and length. Several diagnostic tests, such as correlation analysis, cross-section dependence testing, and unit root testing, were carried out by the study prior to the panel ARDL's installation.

Correlation Matrix

	GDP	**INF**	**UNEMP**
GDP	1	0.124	-0.117
INF	0.124	1	0.013
UNEMP	-0.117	0.013	1

Source: Calculated by the author using WB data and E-views-12

The correlation analysis's outcomes reveal that the correlation coefficients among the variables are all below 0.8, suggesting a lack of linear correlation between the regressors.

Unit Root Test

The presence of cross-sectional dependence among the models reduces the efficiency of the first-generation unit root tests. Thus, to check the time series' stationarity and determine the order of integration of the data, the second-generation unit root tests were applied: cross-section augmented Dickey–Fuller.

Unit Root Test Results

Variables	Level		

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	Test	Prob	The first Difference with intercept	R-squared
GDP	ADF	0.0000	0.0000	0.855916
INF		0.0000	0.0000	0.662908
Unemp		0.0015	0.0015	0.400414

Source: Calculated by the author using WB data and E-views-12

ARDL Model Results

Unlike previous procedures, the ARDL cointegration method does not require pretests for unit roots. As a result, the ARDL cointegration technique is robust when there is just one long-run link between the underlying variables in a small sample size and is preferred when working with variables that are integrated of a different order, I(0), I(1), or a mix of both. The long-term link between the underlying variables is found using the Wald test (F-statistic). According to this method, the F-statistic surpasses the critical value band, indicating the establishment of the series' long-term association. This method's primary benefit is its ability to identify the cointegrating vectors in situations where there are several cointegrating vectors.

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	1.000000	1116.563	35.19275	0.0000
At most 1	0.219364	11.77873	20.26184	0.4688
At most 2	0.123933	4.101697	9.164546	0.3972
Trace test indicates 1 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

The previous results indicate that the trace statistic is less than or equal to the critical Value (0.05) at the first difference, so we can accept H0 (Where there is just one cointegration between variables), and reject the alternative hypothesis H1, which means that there is more than one cointegration between variables for this group of countries.

ARDL (PMG) Test (Dependent Variable: GDP)

Variable	Coefficients	T- Statistic	F-statistic	Prob(F-statistic)	R-squared
Long Run Equation					
GDP(-1)	0.21	1.54	4.483	0.002	0.679
LOG(INF(-1))	-1.8963	-2.182			
LOG(UNEMP(-1))	35.13	4.07			

According to the results in the above table, there is a positive correlation between economic growth rate and unemployment in the countries under study. This suggests that even when GDP growth rate increases, the unemployment rate will continue to rise, which may be a reflection of labour market distortions in those

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nations. As a result, there is a long-term negative relationship between inflation and GDP growth rate, meaning that when GDP growth rate increases, the inflation rate decreases.

ARDL (PMG) Test (Dependent Variable: LOG(INF)

Variable	Coefficients	T- Statistic	F-statistic	Prob(F-statistic)	R-squared
Long Run Equation					
LOG(INF(-1))	0.657615	4.983707			
LOG(UNEMP)	0.057829	0.047985	12.50671	0.0000	0.463096

To examine the relationship between unemployment and inflation, the inflation rate was regarded as a dependent variable in the model above, while the unemployment rate was regarded as an independent variable. The findings indicated that the year after an increase in the inflation rate, the jobless rate increases. Put differently, the rise in inflation is influenced by the growth in unemployment. However, this refutes the existence of a Phillips curve for the nations studied in terms of the correlation between unemployment and inflation.

ARDL (PMG) Test (Dependent Variable: Unemp

Variable	Coefficients	T- Statistic	F-statistic	Prob(F-statistic)	R-squared
Long Run Equation					
UNEMP(-1)	1.026645	5.190739	16.38687	0.000003	0.645486
(INF)	0.002928	0.101950			

In the above model, the unemployment rate was considered the dependent variable, while the inflation rate was considered an exogenous variable. The results also showed that high inflation leads to high unemployment in the countries under study and also denies the existence of a Phillips curve for the relationship between inflation and unemployment in the countries under study.

Conclusion

The earlier findings are consistent with one another because the Granger causality results and the ARDL model results both showed that there was no Phillips curve in the countries studied during the study period, meaning that the relationship between inflation and unemployment does not follow a Phillips curve.

However, the results regarding the effect of the inflation rate on GDP growth were in line with economic theory, and this may be due to the inflation rate being linked to some international variables outside the framework of internal variables in the economy, such as imported inflation. However, the results regarding the effect of unemployment on the GDP growth rate The gross domestic product is the opposite of economic theory so that unemployment does not decrease even in the event of high growth, which confirms the historical distortions in the labor markets of the countries under study and emphasizes the necessity of following different labor policies that are compatible with economic variables and appropriate to the condition of each country.

It is clear from the previous presentation that the results of all types of econometric analysis for the countries of the Middle East and North Africa (except high-income countries) during the period 1990-2022 All results agree in confirming the absence of a Phillips curve in those countries, meaning that the relationship between inflation and unemployment is not inverse and that It also confirms the validity of the null hypothesis (H0) of the study and rejects the alternative hypothesis(H1). Hence, the results of the current study were consistent with the results of (Muhammad Azam, Rasheed Khan and Saleem Khan:2021) and the result of (Tarek Kacemi and Sallahuddin Hassan:2018).

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Policy Recommendation

The most important result of this study is the rejection of the Phillips curve hypothesis of the economist Friedman which argues that, in the long run, the Phillips curve is vertical and any attempt to lower the unemployment below the natural rate leads to a simultaneous rise in unemployment and inflation. The results in this study indicate that inflation and unemployment can coexist in MENA countries in this study, which means that economic policies that want to reduce the unemployment rate, for example, cannot allow the inflation rate to increase in the countries under study, and the opposite is also true.

It may be useful in the countries under study to continue stimulating the growth rate of the gross domestic product by following the appropriate economic policies for each country, taking into account that raising the growth rate of the gross domestic product will lead to reducing inflation rates, as stated in the results of the current study, and then it is possible to influence Inflation rate first. With regard to the unemployment rate, the matter here requires a package of flexible policies that vary between supporting the economic sectors that create job opportunities, achieving alignment between educational outcomes and labor market requirements, and reconsidering social protection programs for workers, their quality, duration, and their impact on the unemployment rate in each country.

Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, author.

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