

Evaluation of the Inflation and Unemployment Targeting Strategy in Maghreb Countries: An Analytical and Econometric Study Using Panel Data for the Period (1982–2023)

Baghdad Torkia^{1*}, Zouad Assia²

¹ University of Mostaganem (Algeria), torkia1984@gmail.com

² University of Relizane (Algeria), zouadassia31101990@gmail.com

Received: 27/09/2025

Accepted: 01/12/2025

Published: 31/12/2025

Abstract:

Unemployment and inflation are among the most pressing economic issues that have consistently burdened governments across different historical periods, as they serve as key indicators of a country's economic performance and are considered global phenomena. The Maghreb countries were not exempt from these challenges, particularly during the 1980s, when they experienced sharp increases in both unemployment and inflation rates. This situation prompted the implementation of economic reform programs in cooperation with the International Monetary Fund to mitigate inflationary pressures.

Within this context, the present study seeks to examine the relationship between unemployment and inflation in Maghreb countries over the period 1982–2023, using panel data analysis. The findings reveal a positive but weak correlation between the two variables, which stands in contrast to the predictions of conventional economic theory.

Keywords: Inflation, Unemployment, Maghreb countries, Panel data, Phillips curve.

* corresponding author

1. Introduction

This study addresses the persistent challenges of unemployment and inflation in Maghreb countries, which remain central to macroeconomic stability. These two indicators are fundamental for achieving the objectives of the so-called “magic square”: price stability, full employment, economic growth, equitable income distribution, and balance of payments equilibrium.

Historically, the Maghreb region experienced severe inflationary and unemployment pressures, particularly during the 1970s and 1980s, due to structural weaknesses, dependence on primary exports, and external shocks such as oil price fluctuations. In response, governments in the late 1980s and early 1990s implemented IMF-backed reform programs aimed at correcting imbalances and transitioning toward open market economies. While these reforms restored some macroeconomic balance, they also intensified social challenges, as unemployment and inflation continued to persist.

The continued prevalence of these issues highlights the need for more comprehensive and flexible policies that consider the dynamic relationship between unemployment and inflation. Studying this relationship is not only theoretically relevant but also practically essential for guiding effective economic policymaking in the Maghreb region.

Unemployment and inflation remain among the most persistent challenges facing the economies of Maghreb countries. Despite the adoption of

economic reforms since the 1980s, the relationship between these two variables remains ambiguous and requires further investigation. Accordingly, the central research question is: What is the nature of the relationship between unemployment and inflation in Maghreb countries during the period 1982–2023?

Research Hypotheses:

First Hypothesis: There is an inverse relationship between unemployment and inflation rates in Maghreb countries during the period 1982–2023, consistent with the traditional economic theory (Phillips Curve)

Second Hypothesis: The economic reforms implemented in Maghreb countries since the late 1980s have influenced the relationship between unemployment and inflation, weakening or altering the nature of this linkage.

Third Hypothesis: The relationship between unemployment and inflation in Maghreb countries is weak and unstable, reflecting the specific characteristics of these economies and the differences in policy transmission mechanisms compared to developed countries.

This study aims to:

- Analyze the relationship between unemployment and inflation in Maghreb countries during the period 1982–2023 using panel data.
- Test the validity of the Phillips Curve hypothesis within the economic context of Maghreb countries by examining the existence of an inverse relationship between the two variables.
- Examine the impact of economic reforms adopted by Maghreb countries since the late 1980s on the nature of the

relationship between unemployment and inflation.

- Assess the stability of the relationship between unemployment and inflation in the long run and highlight the specific features of Maghreb economies compared to developed countries.
- Provide practical recommendations for policymakers in Maghreb countries to design more efficient and flexible macroeconomic policies to address unemployment and inflation.

2. Preliminary Approaches to the Phillips Curve: The Phillips Curve, introduced by A.W. Phillips in 1958, revealed an inverse relationship between wage growth and unemployment in the UK. This finding became a cornerstone of macroeconomics, inspiring extensive research on the link between inflation and unemployment and shaping both economic theory and policy

2.1. The Classical Analysis of Unemployment and Inflation:

In classical economic thought, unemployment and inflation were analyzed within the framework of self-regulating markets. The classical view assumed that labor markets adjust through wage flexibility, ensuring full employment in the long run. Inflation, in turn, was regarded mainly as a monetary phenomenon, resulting from excessive growth in the money supply. Thus, the classical analysis emphasized the neutrality of money and the limited role of government intervention in stabilizing the economy.

The relationship between unemployment and inflation can be explained according to

the classical model as follows (**Fig.1** in the Appendices)

The curve illustrates that the economy cannot reduce unemployment below its natural or voluntary level (point B), which represents full employment except for a structural or frictional share of unemployment. Any attempt to push unemployment beneath this threshold inevitably leads to higher inflation rates. Thus, the relationship between unemployment and inflation is not a stable inverse correlation, as suggested by the traditional Phillips Curve, but rather a positive relationship that emerges once unemployment falls below its natural level. This view reflects the perspective of the neoclassical school, which argues that the economy gravitates toward equilibrium at the natural rate of unemployment. Expansionary policies may temporarily reduce unemployment, but they ultimately generate permanent inflationary pressures, making inflation the direct cost of such interventions. Consequently, the curve highlights the importance of focusing on price stability and controlling inflation rather than striving to reduce unemployment to unattainable levels.

2.2. The Keynesian Analysis of Unemployment and Inflation:

In Keynesian economics, unemployment and inflation are analyzed through the lens of aggregate demand and aggregate supply. Keynes emphasized that markets do not always self-correct, and that insufficient demand can lead to persistent unemployment. Inflation, in turn, is viewed as a result of excess demand or supply-side rigidities. Thus, the Keynesian perspective

highlights the active role of fiscal and monetary policies in reducing unemployment and controlling inflation, particularly during periods of economic instability

Keynesian analysis agrees with the classical approach in denying the existence of a direct relationship between unemployment and inflation, as illustrated in the following figure (Fig.2 in the Appendices)

The curve shows that the inflation rate remains almost constant at zero regardless of changes in the unemployment rate. In other words, the relationship between unemployment and inflation is either nonexistent or extremely weak.

This perspective reflects the Keynesian analysis in certain contexts, where the economy may coexist with high levels of unemployment without necessarily experiencing a decline in inflation, particularly during periods of recession or weak aggregate demand

2.3. The Original Phillips Curve

Phillips constructed a nonlinear function that demonstrated an inverse relationship between wage inflation and the unemployment rate during the period 1861–1913. He then showed how this function could be applied to explain the nature of the relationship between the two variables in the subsequent periods 1913–1948 and 1948–1957.

The algebraic expression employed by Phillips for this composite function is as (Phillips, The Relation Between Unemployment and The Rate Of Change Of Money Wage in The U.K 1861 – 1957, 1958, p. 290):

$$y + a = b x^c$$

$$\log(y + a) = \log(b) + c \log(x)$$

Where y denotes the rate of change in wages and x represents the unemployment rate, the parameters b and c were estimated using the least squares method based on the values of x and y within the interval of 0 to 5% unemployment. The parameter a , on the other hand, was determined through a trial-and-error approach in order to ensure that the curve closely fits the remaining observed points within the unemployment range of 5 to 11%. Accordingly, the following estimated relationship was obtained:

$$\log(y + 0.9) = 0.984 - 1.394 \log(x)$$

The following figure illustrates the relationship between the unemployment rate and changes in monetary wage rates in Britain during the period from 1861 to 1957 (Fig.3 in the Appendices)

The curve illustrates the inverse relationship between the unemployment rate and the rate of change in monetary wages in Britain during the period 1861–1913. It shows that lower unemployment is associated with a significant increase in wage growth due to higher demand for labor, while higher unemployment leads to slower wage growth or even a decline as a result of labor surplus. The dispersion of data points around the curve also indicates that unemployment is not the sole factor influencing wages; other elements such as productivity, economic policies, and trade unions play a role. This highlights the empirical nature of the relationship, which later formed the basis for the development of the Phillips Curve.

2.4. The General Form of the Phillips Curve Equation:

After the statistical analysis conducted by Phillips, the general form of the curve can be expressed as follows (Phillips, 1957, p. 285): Fig.4 in the Appendices

$$w_t = \alpha_0 + \alpha_1 U_t^{-1}$$

w_t : The rate of change of the wage rate

U_t^{-1} : The reciprocal of the unemployment rate during the period t

α_0 : A constant that determines the position of the Phillips Curve

α_1 : The slope of the Phillips Curve

The original Phillips curve illustrates a clear inverse relationship between unemployment and the rate of change in monetary wages. In periods of low unemployment, wage growth accelerates as labor demand intensifies and employers compete to attract workers. For instance, when unemployment is as low as 0.8%, wages may rise by more than 2%. At moderate unemployment levels, such as around 2.5%, wages still increase but at a slower rate. However, when unemployment surpasses roughly 5.5%, wage growth slows significantly, approaching zero or even turning negative (around -1%), reflecting excess labor supply that drives wages downward. This relationship underscores the pivotal role of the labor market in shaping wage dynamics and reveals a trade-off between unemployment and wage growth, which later became the foundation for linking unemployment with inflation in the Phillips Curve framework.

Based on this, the modified Phillips Curve that illustrates the relationship between the unemployment rate and the inflation rate can be expressed as follows: Fig.5 in the Appendices

The modified Phillips Curve illustrates the relationship between unemployment and inflation, taking into account the effect of productivity on the link between unemployment and wages. The green curve represents the original Phillips Curve, which shows the inverse relationship between unemployment and the rate of change in monetary wages, while the blue curve shows the relationship after adjusting for productivity, i.e., between unemployment and inflation. The figure indicates that at low levels of unemployment (around 2.5%), inflation is positive due to upward pressure on wages, whereas when unemployment rises to around 5.5% or more, inflation approaches zero or even turns negative, reflecting the impact of labor surplus in reducing price growth. Thus, the modified curve demonstrates that the relationship between unemployment and inflation resembles the original wage relationship but provides a more accurate reflection of economic reality

3. Econometric Assessment of the Inflation and Unemployment Targeting Strategy in Maghreb Countries:

We will examine the relationship between the inflation rate and the unemployment rate in the Maghreb countries using panel data.

3.1. The General Framework of the Econometric Study and Its Objectives:

Despite the large number of empirical studies that have examined the relationship between unemployment and inflation using various econometric methods and models, their findings have not reached a unified conclusion. Some studies have found a clear inverse relationship between the two variables, while others indicated that the relationship is either weak or statistically insignificant in the short run, and in some cases even nonexistent. Therefore, the main objective of this stage of the research is to measure the relationship between unemployment and inflation using panel data covering five Maghreb countries, considered as a geographically and regionally integrated bloc, over the period 1982–2023, based on the available data, in an attempt to provide a deeper and more comprehensive understanding of this relationship.

3.2. The Model Used:

The first step consists of verifying the presence or absence of homogeneity in the overall trend of the data, based on the homogeneity tests proposed by “Hsiao (1986)”, as previously discussed. This is followed by examining the stationarity of the time series and the cointegration relationships among the model variables. Subsequently, a set of statistical tests is conducted to determine the most appropriate specification for estimating panel data models, through which the econometric analysis of the relationship between unemployment and inflation will be carried out.

To analyze the relationship between unemployment and inflation, the following inflation function is employed:

$$Y = f(\text{CHOM, GDPG, POP, GOV, M2, IMP, INV})$$

In brief, the model can be presented in its general form by grouping all explanatory variables under the symbol as follows

$$y_{i,t} = \alpha_i + \beta X_{i,t} + \varepsilon_{i,t} \dots \dots \dots (1)$$

$$i = 1, 2 \dots, N$$

$$t = 1, 2 \dots, T$$

$y_{i,t}$: The dependent variable represents the unemployment rate of country i in period t

α_i : It denotes the country-specific effect, which is addressed using either the fixed effects approach or the random effects approach through the Hausman test.

β : The parameters to be estimated for each independent variable

$X_{i,t}$: The matrix represents $T \times 1$ the random error term for country i in period t

$\varepsilon_{i,t}$: A column vector $T \times 1$ of the random error term for country i in period t

To implement this model, the study relies in its econometric analysis on a pooled dataset that combines cross-sectional and time series data. The number of cross-sectional units is $n = 5$, representing the five Maghreb countries. Each cross-sectional unit contains a time series of $t = 42$ annual periods covering the span from 1982 to 2023. Accordingly, the total number of observations used in the analysis is $(T \times n) = 210$ observations

(Table 1. in the Appendices)

The data sources for the variables used in this econometric study were diversified, having been collected from several international and regional institutions, including: the World Bank (WDI), the International Monetary Fund (IFS), the United Nations Conference on Trade and Development (UNCTAD), the World Data Atlas (Knoema), the Statistical, Economic and Social Research and Training Centre for Islamic Countries (SESRIC), in addition to the Economic Research Center in Libya

3.3. The Variables Used in the Study:

This econometric study uses panel data from five Maghreb countries—Algeria, Morocco, Tunisia, Libya, and Mauritania—to examine the relationship between unemployment and inflation. Inflation, measured by the consumer price index, is the dependent variable, while the explanatory variables include unemployment, population growth, GDP growth, government spending, money supply, imports, and investment. By analyzing the combined effects of these factors, the study aims to clarify the dynamics of inflation and its connection with unemployment in the Maghreb region. (Table 2. in the Appendices)

3.4. Steps of Model Estimation and Presentation of Results:

This part of the study presents the stages of model estimation using a panel data sample covering five (5) Maghreb countries over the period 1982–2023.

3.4.1. Descriptive Statistics:

We begin with a descriptive presentation of the study variables, summarizing the main

results in the following table (Table 3. in the Appendices)

The descriptive statistics show mixed patterns among the explanatory variables. Inflation averages 5.77% with wide fluctuations, while unemployment is relatively high (15.28%) but more stable. GDP growth is highly volatile, reflecting major economic shocks, whereas population growth remains steady. Government spending, money supply, imports, and investment display sharp swings, sometimes negative or unusually high, pointing to policy irregularities and external shocks. Overall, the variables combine both stability and volatility, justifying their econometric analysis to clarify their link with inflation.

3.4.2. The Correlation between the Explanatory Variables:

The examination of the correlation matrix among the explanatory variables contributes to identifying the nature and direction of the relationships between them, as illustrated in the following table (Table 4. in the Appendices)

Table (4) illustrates the interrelationships among the explanatory variables, from which the following points can be highlighted:

- GDP Growth (GDPG):

It shows strong correlations with both investment (0.54) and imports (0.51), indicating that economic growth is closely linked to higher investment and trade openness. Its moderate correlation with government expenditure (0.44) further

reflects the role of fiscal policy in stimulating economic activity.

- Investment (INV):

This is the most strongly correlated variable, with significant positive links to imports (0.65) and GDP growth (0.54). These associations highlight the central role of investment in fostering economic expansion and enhancing trade flows.

- Inflation (INF):

It is moderately correlated with both unemployment (0.36) and population growth (0.40), which deviates from traditional assumptions such as those of the Phillips curve. Its correlations with other variables are weak and mostly negative, suggesting a limited direct effect on the remaining indicators.

- Unemployment (Chom):

Its correlations with most variables are weak, except for inflation (0.36). This suggests that unemployment in the sample may be driven more by structural factors than by direct macroeconomic dynamics.

- Population Growth (POP):

Its strongest association is with inflation (0.40), while other correlations are weak and negative. This indicates that demographic changes tend to influence prices more than growth or investment.

- Government Expenditure (GOV):

It has a positive correlation with GDP growth (0.44), confirming the role of fiscal policy, while its correlations with other variables remain weak or negligible.

- Money Supply (M2):

Its correlations are very weak overall, with the highest being with investment (0.13). This may reflect the limited direct impact of monetary policy in the economic context of the sample.

- Imports (IMP):

They exhibit strong correlations with both investment (0.65) and GDP growth (0.51), indicating that higher levels of growth and investment are naturally accompanied by an expansion in imports

Conclusion

- Strong interconnections exist between GDP growth, investment, and imports, highlighting their joint role in driving economic activity.
- Inflation shows a positive correlation with unemployment and population growth, diverging from traditional theoretical expectations, and suggesting context-specific dynamics.
- Most other correlations are weak, which reduces the likelihood of severe multicollinearity problems in the econometric model.

3.4.3. Stationarity of Time Series:

This test aims to examine the time series properties of the variables under study within the panel model, relying on the LLC, IPS, and Fisher-ADF tests. These tests were applied separately to each variable in a systematic manner, leading to the results

presented in the following table (Table 5. in the Appendices)

The unit root tests (LLC, IPS, ADF) show that GDP growth, population, government expenditure, money supply, imports, and investment are stationary at level $I(0)$, while inflation and unemployment are stationary only at first difference $I(1)$. Thus, the variables include both $I(0)$ and $I(1)$ series, making it suitable to proceed with cointegration analysis to test for long-run relationships.

3.4.4. Studying Cointegration Relationships:

Based on the previous results, it was found that some variables are non-stationary but integrated of the same order, which necessitates conducting a cointegration test among these variables using the “Pedroni” test, yielding the following results. (Table 6. in the Appendices)

Since most probability values are below the 5% significance level, the null hypothesis of no cointegration is rejected, confirming the existence of a long-run cointegration relationship among the variables.

3.4.5. Estimation of Panel Time Series Models: (Table.7. in the Appendices)

Panel time series models are estimated using three longitudinal data approaches. the Pooled Regression Model (PRM), the Fixed Effects Model (FEM), and the Random Effects Model (REM), as presented in the following table.

above table shows that the overall probability values of the parameters in the “PRM, FEM, and REM” models are lower than the 5% significance level, indicating

that these models are statistically significant and therefore acceptable for estimation.

3.4.6. Model Selection Tests:

To identify the most appropriate model, we rely on model selection techniques by applying the Breusch–Pagan Lagrange Multiplier (LM) test and the “Hausman test”.

- **Lagrange Multiplier Test (LM Test)**

For the purpose of comparing the pooled regression model with the fixed-effects and random-effects models, the **LM test** was applied, and the results were as follows (Table.8. in the Appendices)

Since the p-value (0.0039) is lower than the 5% significance level, the null hypothesis of the Breusch–Pagan LM test is rejected, providing statistical evidence in favor of the random-effects model (REM) over the pooled regression model (PRM).

- **Hausman Test**

To compare the fixed-effects model with the random-effects model, the “Hausman test” is employed, and the results are presented in the following table (Table.9. in the Appendices)

Since the p-value (0.9496) is much greater than the 5% significance level, the null hypothesis of the LM test is accepted, indicating that the pooled regression model (PRM) is the appropriate specification, with no statistical justification to switch to the random-effects model.

3.4.6. Estimation of Model Parameters Using the Random-Effects Model:

After conducting the “Hausman test” for model selection, the parameters are estimated using the random-effects model through the Ordinary Least Squares (OLS) method, yielding the following results (Table.10. in the Appendices)

Based on the estimation results:

- Unemployment rate (Chom), government expenditure (GOV), and money supply (M2) were found to have a significant and positive impact on inflation at the 5% significance level.
- Conversely, economic growth (GDPG), population growth (POP), imports (IMP), and **investment (INV) did not show any statistically significant effect on inflation during the study period.
- The R-squared value was approximately 0.32, indicating that the explanatory variables account for about 32% of the variations in inflation, suggesting that other unobserved factors may explain the remaining share

4. Conclusion:

This study evaluated the strategy of targeting inflation and unemployment in the Maghreb countries during the period (1982–2023), using panel data methodology and various econometric models. The results revealed that certain macroeconomic variables—such as the unemployment rate, government expenditure, and money supply—are key determinants of inflation, while economic

growth, population growth, investment, and imports showed no significant impact on price fluctuations during the study period. Furthermore, the econometric tests indicated that the Random Effects Model is the most appropriate specification to represent the relationship between the .variables under study

These findings suggest that the strategy of targeting inflation and unemployment in the Maghreb countries still faces several challenges, most notably the limited capacity of current economic policies to control the underlying drivers of inflation, in addition to external and structural factors not captured by the applied models. Therefore, the effectiveness of this strategy requires enhanced coordination between monetary and fiscal policies, alongside the development of structural policies aimed at promoting sustainable growth and job .creation

Accordingly, the study contributes to enriching the academic debate on the feasibility of inflation and unemployment targeting in developing economies, and opens the way for more in-depth future research, particularly through the integration of institutional, financial, and external variables that may better explain the dynamics of inflation and unemployment in the region.

Recommendations:

- Strengthen coordination between monetary and fiscal policies: Align central bank objectives with fiscal policy measures to avoid conflicting goals, ensuring inflation control without negatively affecting growth and employment.

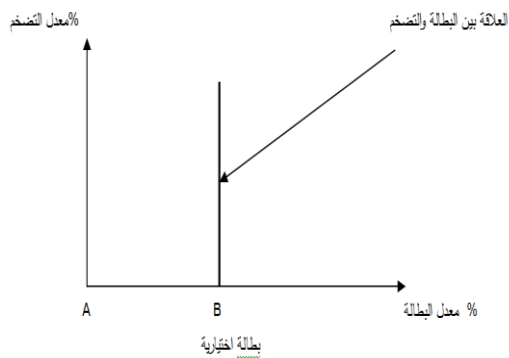
- Restructure public expenditure: Redirect government spending towards productive sectors and infrastructure that support long-term growth, rather than relying heavily on current expenditures that fuel inflationary pressures.
- Control money supply (M2): Implement more flexible and transparent monetary policies to regulate monetary growth in line with the real economy's capacity, thereby preventing excessive inflation.
- Diversify the production base: Reduce dependence on imports by promoting domestic manufacturing and supporting small and medium-sized enterprises, which can mitigate the impact of external shocks on inflation.
- Encourage productive investment: Create an attractive environment for both domestic and foreign investment in sectors that generate added value and sustainable job opportunities, thereby contributing to lower unemployment rates.
- Develop demographic and structural policies: Address population growth through educational and training policies aimed at enhancing labor productivity, thus balancing demographic and economic growth.
- Enhance transparency and institutional capacity: Strengthen the role of economic and financial institutions in effectively implementing inflation and unemployment targeting policies, thereby boosting trust among investors and citizens.

5. Bibliography List:

1. *Macroeconomic Theory*. Alexandria ,Atiya, A. M. (1998), Al-Dar Al-Jameia for Books.
2. *Principles of Macroeconomics* ,Ahmed RamadanI, N. (2004),Alexandria, Al-Dar al-jameia Publishing
3. The relation between unemployment and the rate of change of money wage rates in the united kingdom 1861-1957,A.W.Phillips. (1958, nov), 5
4. *Unemployment and Inflation: Theoretical Propositions and Approaches of Economic Policy* ,Al-Dabbagh, O. B. (2007), Jordan: Al-Ahliya for Publishing and Distribution.
5. The Relation Between Unemployment and The Rate Of Change Of Money Wage in The U.K 1861 – 1957,Phillips, A. W. (1957), (5)

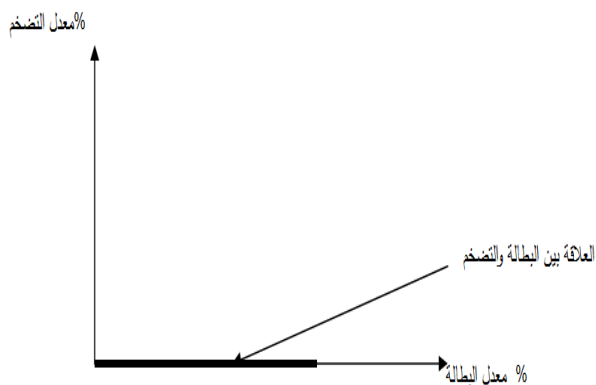
6. Appendices:

Fig.1. The Relationship between the Unemployment Rate and the Inflation Rate



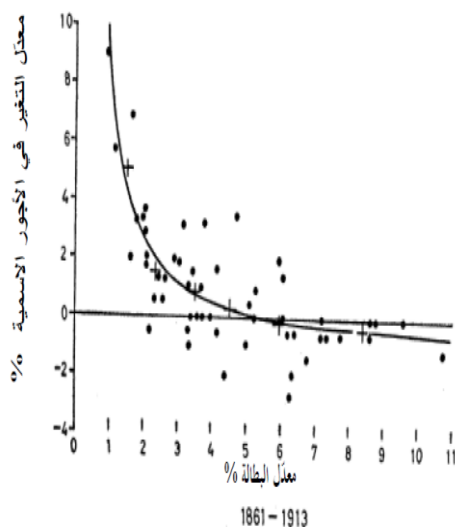
Source: (Ahmed Ramadanl, 2004, p. 279)

Fig.2. The Relationship between the Unemployment Rate and the Inflation



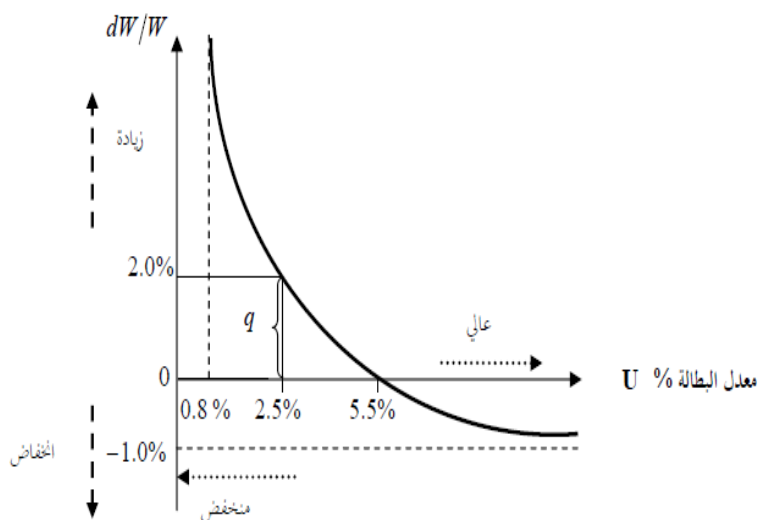
Source: (Atiya, 1998, p. 326)

Fig.3. The Phillips Curve for the United Kingdom (1861–1957)



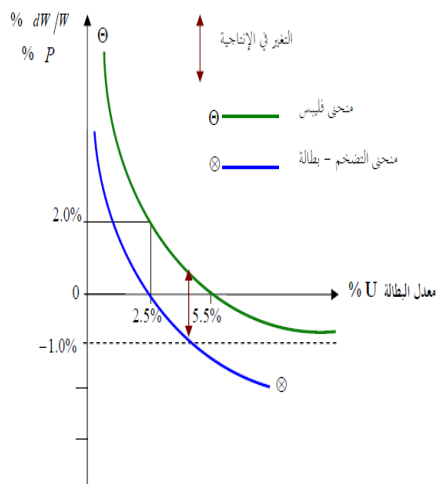
Source : (A.W.Phillips, 1958, p. 285)

Fig.4. The Original Phillips Curve



Source : (Al-Dabbagh, 2007, p. 195)

Fig.5. The Modified Phillips Curve



Source: (Al-Dabbagh, 2007, p. 197)

Table 1. Variables Used in the Study

Symbol	Variable Name
Y	Inflation rate, denoted as (INF), representing the dependent variable
GDPD	Real GDP growth rate
CHOM	Unemployment rate
POP	Population growth rate
GOV	Government expenditure growth rate
M2	Money supply growth rate
IMP	Import rate
INV	Gross domestic investment rate

Source: Prepared by the researchers based on the variables of the model under study

Table. 2. Study Variables

Variable	Definition and Description	Data Source
INF	Inflation rate measured by the general level of consumer prices (CPI)	World Bank Statistics (WDI), United Nations Conference on Trade and Development (UNCTAD)
CHOM	Unemployment rate, expressed as the growth rate of the total labor force	World Bank Statistics (WDI), International Monetary Fund (IFS)
GDPG	Real GDP growth rate	Bank Statistics (WDI), United Nations Conference on Trade and Development ((UNCTAD
POP	Population growth rate	World Bank Statistics (WDI)
GOV	Government expenditure growth rate, expressed as the growth rate of final government consumption expenditure	World Data Atlas (Knoema), SESRIC (Statistical, Economic and Social Research and Training Centre for Islamic Countries)
M2	Money supply growth rate, expressed as the growth of broad money supply	World Bank Statistics (WDI), SESRIC
IMP	Import growth rate	United Nations Conference on Trade and Development (UNCTAD), Economic Research Center in Libya
INV	Investment growth rate, represented by the growth of	World Data Atlas (Knoema)

	gross fixed capital formation	
--	--------------------------------------	--

Source: Prepared by the researchers based on the variables of the model under study

Table. 3. Descriptive Statistics of the Explanatory Variables

Variables	Mean	Maximum	Median	Std.Dev	Minimum
INF	5.772821	31.60000	4.700000	5.192569	-9.800000
Chom	15.28108	31.84000	14.55000	4.560892	8.910000
GDPG	3.419385	123.1400	3.290000	10.77224	-62.08000
POP	1.999744	3.910000	1.950000	0.770639	0.550000
GOV	4.199282	137.7700	3.000000	22.98192	-172.0000
M2	11.77415	54.05000	11.68000	8.244654	-7.890000
IMP	4.193846	112.0000	4.000000	16.09315	-54.80000
INV	3.145538	112.1000	3.300000	19.21892	-113.0000

Source: Prepared by the researchers based on the variables of the model under study

Table. 4. Correlation Matrix of the Explanatory Variables

INV	IMP	M2	GOV	POP	GDPG	Chom	INF	
							1.000000	INF
						1.000000	0.361160	Chom
					1.000000	-0.033706	-0.071493	GDPG
				1.000000	-0.058106	-0.024898	0.404719	POP
			1.000000	-0.165159	0.443868	0.1105659	-0.131701	GOV

Evaluation of the Inflation and Unemployment Targeting Strategy in Maghreb Countries: An Analytical and Econometric Study Using Panel Data for the Period (1982–2023)

		1.000000	0.093715	0.022254	0.029789	0.141815	0.212941	M2
	1.000000	-0.002125	0.151797	-0.152356	0.513457	-0.081213	-0.163082	IMP
1.000000	0.650936	0.130993	0.047773	-0.048559	0.541373	-0.148149	-0.059265	INV

Source: Prepared by the researchers based on the results of EViews 10

Table. 5. Results of the Time Series Stationarity Test

		LLC		IPS		ADF	
		Statistic	Prob	Statistic	Prob	Statistic	Prob
INF	At level I(0)	-1.63913	0.0506	-2.05658	0.0199	18.9869	0.0404
Chom	At first difference I(1)	-8.63909	0.0000	-10.5588	0.0000	104.328	0.0000
GDPG	At level I(0)	-0.88631	0.1877	-0.43859	0.3305	11.9976	0.2852
POP	At first difference I(1)	-8.15627	0.0000	-7.93737	0.0000	76.3150	0.0000
GOV	At level I(0)	-6.32621	0.0000	-8.18503	0.0000	79.8951	0.0000
M2	At first difference I(1)	/	/	/	/	/	/
IMP	At level I(0)	-9.76175	0.0000	-6.67392	0.0000	63.4052	0.0000
INV	At first difference I(1)	/	/	/	/	/	/

Source: Prepared by the researchers based on the results of EViews 10

Table. 6. Results of Pedroni Cointegration Test

Tests				Weighted Statistic	
Sub-tests		Statistic	Prob	Statistic	Prob
Within-dimension	V-Statistic	0.0032	2.723288	2.032408	0.0211
	Rho-Statistic	0.0039	-2.658791	-4.507486	0.0000
	PP-	0.0069	-2.460505	-3.920474	0.0000

	Statistic				
	ADF-Statistic	0.0257	-1.947795	-2.306476	0.0105
Between-dimension	Rho-Statistic	0.0009	-3.130792		
	PP-Statistic	0.0002	-3.538419		
	ADF-Statistic	0.0159	-2.147036		

Source: Prepared by the researchers based on the results of EViews 10

Table. 7. Results of Panel Time Series Models Estimation

	Estimation Models					
	PRM		FEM		REM	
Variables	Coeff	Prob	Coeff	Prob	Coeff	Prob
C	-6.605885	0.0000	-7.843597	0.0000	-7.492387	0.0000
Chom	0.410874	0.0000	0.469377	0.0000	0.451689	0.0000
GDPG	0.023071	0.5669	0.011769	0.7650	0.014369	0.7135
POP	2.541107	0.0000	2.828268	0.0000	-0.021626	0.1646
GOV	-0.029177	0.0672	-0.019438	0.2151	2.764464	0.0000
M2	-0.099629	0.0108	0.077141	0.0445	0.081730	0.0321
IMP	-0.035137	0.1859	-0.022323	0.3909	-0.025147	0.3307
INV	0.011601	0.6233	0.004687	0.8397	0.006209	0.7873
R²	0.345457		0.397778		0.322688	
DW Stat	0.726181		0.748693		0.741433	
Fisher Prob	0.000000		0.000000		0.000000	

Source: Prepared by the researchers based on the results of EViews 10

Table. 8. Correlation Matrix of the Explanatory Variables

	Test Value	P-VALUE
LM Breusch-Pagan Test	8.307293	0.0039

Source: Prepared by the researchers based on the results of EViews 10

Table. 9. Correlation Matrix of the Explanatory Variables

Test Value (Chi-Square Statistic)	P-VALUE
2.173240	0.9496

Source: Prepared by the researchers based on the results of EViews 10

Table. 10. Correlation Matrix of the Explanatory Variables

Dependent Variable: Inflation Growth Rate			
5=210×Period:1982-2023 N=5 T=42 Total Observations 42			
Explanatory Variables	Coefficient 	T. Statistic	P-Value
Chom	0.451689	5.525777	0.0000
GDPG	0.014369	0.367739	0.7135
POP	-0.21626	-1.395217	0.1646
GOV	2.764464	5.967729	0.0000
M2	0.081730	2.159128	0.0321
IMP	-0.025147	-0.975200	0.3307
INV	0.006209	0.270239	0.7873
R- squared: R2	0.322688		

Source: Prepared by the researchers based on the results of EViews 10