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THE IMPACT OF ECONOMIC GROWTH AND INFLATION ON YOUTH UNEMPLOYMENT: EMPIRICAL STUDY IN ESCWA REGION

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Unemployment, GDP Growth, Inflation.

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Abstract

High unemployment particularly among youth is a serious burden for economy. There are many causes behind the high unemployment in the Escwa region, which differ from one country to another. Governments policies aim to solve this problem by creating new jobs symmetric with the sustainability of economic growth. These policies usually aim to increase growth rates and not to reduce unemployment. Inflation is another factor that has influence on unemployment rate, therefore economic growth and inflation are two factors that have impact on unemployment. Youth are the most affected group due to many reasons, the most important is the employment production act applied by within countries. For this purpose, this study investigates the influence of economic growth and inflation on youth unemployment in 16 countries belonging to the ESCWA region for the period 1991-2017. Pedroni Residual Cointegration Test statistic showed that there was no relationship between young unemployment, inflation and economic growth in ESWA'S economies. So, it can be clearly said that the series were not moving together for the long-term period. Furthermore, in this context, the results of Dumitrescu-Hurlin (2012) panel Granger causality test indicated that there is no causality relationship between youth unemployment and economic growth as well between inflation and economic growth. While a unidirectional causality moved from inflation to youth unemployment to inflation.

Keywords

Unemployment, GDP Growth, Inflation.

1. INTRODUCTION

Unemployment is a global problem facing developed and undeveloped countries. It affects society by decreasing the gross domestic product and the cost associated with the loss of motivation, skill, and confidence of people. Governments' policies aim to solve this problem by creating new roles symmetric with the sustainability of economic growth. Inflation is another factor that has an influence on the unemployment rate. It is an economic situation where the general price level of goods and services considerably increases over a long period of time. It is harmful to economic activity and growth. Inflation is phenomenon that has a negative effect on economic and social indicators. The relationship between unemployment and inflation was first mentioned by William Phillips in 1958 and was widely interpreted as a trade-off between inflation and unemployment. This imply that policymakers could achieve a lower rate of unemployment by accepting a higher rate of inflation. During the seventies, a new concept has emerged "high rate of inflation accompanied by rising unemployment rate" this phenomenon is known as stagflation. The evolution of stagflation reopens the door over the validity of Philips curve. For this reason, we won't be examining the relationship between unemployment and inflation using Philips curve framework. Understanding the mutual effect of growth and unemployment rates is the major factor in assessing how unemployment is affected. Economic policies are designed to increase growth rates and not to reduce unemployment. Arthur Okun focused in his research in 1962 on studying the changes in the Gross Domestic Product (GDP) associated with unemployment. He found a negative relationship between changes in unemployment rates around the normal rates and changes in real GDP around the potential average. Potential output is the maximum output produced in the economy when all factors are fully utilized, without acceleration of inflation. Real output is defined as "the national output produced when some factor units remain virtually idle". Thus, the gap between the potential GDP and real GDP stabilizes the change in unemployment which is negatively related to changes in output. High unemployment among individuals, and particularly youth, is a serious burden for every country's economy. In recent years, studies (A. Thayaparan (2014), Muhammad Umair and Raza Ullah (2013), Ayesha Wajid (2013)), have emerged trying to investigate the impact of inflation and economic growth on unemployment. The results of these studies differed between countries under study. Muhammad Umair and Raza Ullah (2013), concluded that inflation has an influential role but little significance on GDP and unemployment. While Ayesha Wajid (2013), concluded that inflation significantly increases unemployment and economic growth has a significant adverse impact on unemployment in long and short runs. In the same context, A. Thayaparan (2014), concluded that both GDP and inflation have an r influential significant role in the macroeconomics factors of Sri Lankan economy. It should be noted that most studies have used time series data to investigate the relationship between unemployment and economic growth. We argue that it is more suitable to study this relationship using panel data in order to ascertain the nature of the relationship between unemployment and economic growth. This paper aims to study the impact of economic growth and inflation on Youth unemployment in 16 countries1 belonging to the ESCWA region for the period 1991-2017. The remainder of this paper is organized as follows: Section 2 presents the literature review. Section 3 provides model specifications, panel data tests, and empirical findings through econometric analysis. Section 4 discusses the findings and section 5 presents the concluding remarks.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

In order to achieve the goals of this study, it is important to highlight some previous work in this subject that would provide us with appropriate theoretical and empirical background for estimating the importance and contributions of this research. This study seeks to check the relationships mentioned before, using analytical and econometric research tools.

The reminder of this section is organized as follows:

First, we highlight the theoretical bases of unemployment, economic growth and inflation. Secondly, I summarize previous research related to our study.

[1] Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Mauritania, Oman, Qatar, Saudi Arabia, Sudan, Tunisia, United Arab Emirates and Yemen.

2.1 Theoretical Literature

Historically, an economic school of thought is a set of economists who share or shared a common view on the way economies work. The two-central schools of economic thought were the classical and Keynesian. Each school has different ideas on the effect of unemployment. The aim of the first section is to highlight comprehensive theories of unemployment. In section two, theories of economic growth will be presented. Market-Power theories of inflation, conventional Demand-Pull theories of inflation and structural theories of inflation will be presented in section three.

2.1.1 Theories of unemployment

The prominent feature of the classical theory if unemployment is the supply determined nature of output and employment. This theory assumes that Labor and output are traded in markets that are always in equilibrium and in which all participants make decisions based on declared real wage rates and product prices. In 1930s, the British economist John Maynard Keynes came with a revolutionized thinking in different fields of macroeconomics including unemployment, money supply and inflation. The general theory of unemployment interest and money changed the way the world understands the economy. Keynes believed that the equilibrium is determined by aggregate demand. Keynes considers employment as a function of income, employment depends upon effective demand which leads to an increase in the production (output), and therefore output generates income and income provides more job opportunities. Both aggregate demand and supply functions determine the effective demand. The supply function is fixed in the short run; this led Keynes to focus on aggregate demand function to solve the problem of unemployment.

2.1.2 Theories of economic growth

This section highlights on the most important theories that constitute in a way alternative stylized pictures of an expanding economy. The Harrod–Domar model was introduced separately by Sir Harrod in 1939 and Evsey Domar in 1946. This model was considered as the precursor to the exogenous growth model. According to this theory there is no natural reason for an economy to have stable growth. According to this theory increasing the savings rate, increasing the marginal product of capital, or decreasing the depreciation rate will increase the growth rate of output; these are the means to achieve growth. The model agreed with the Keynesian beliefs that an economy does not find full employment and stable growth rates naturally. Solow model is another model as an alternative of Harrod-Domar model of growth. Solow believed that production is a continuous function connecting output to input of labor and capital which are substitutable. The standard Solow model states that permanent growth is achievable only through technological progress and economies converge to a steady state equilibrium. Shifts in saving and in population growth affect only level effects in the long term. After the failure of the Neo-classical theory – Exogenous Growth in the explaining the reasons for the acceleration of growth rates only in developed countries without other countries. A new theory emerged by (Romer, 1986 and Loucas, 1988) called Endogenous Growth theory, which suggests that continuous growth is determined from within the production process itself and not from outside. According to this theory, technological improvement or cognitive accumulation and human capital are the driving forces of economic growth through the effect of cognition, education and training on the productivity of labor and on increasing the human capital inside the economy. Romer suggests that continuous growth is determined from within the production process itself and not from outside, and technological improvement and cognitive accumulation are the driving forces of economic growth. Romer considered that the cause of differences in economic growth between countries is due to the difference in their savings rates. Thus, the economic growth rate in a country is growing if the savings rate is high, with the increasing of the cumulative productivity of knowledge, and a large size of the economy. Therefore, economic policies that stimulate savings can increase economic growth rates in the long run. There is a main

difference between the Romer model and the Solo model, Solow stated that adopting an economic policy that stimulates savings can lead the economy into the path of economic growth, while Romer model explained that economic policies that stimulate savings can increase economic growth rates in the long run.

2.1.3 Theories of inflation

Several theories on inflation have been discussed. These theories were provided by economists belonging into one of two classes, namely, monetarists and structuralists. Monetarists believed that inflation relates to monetary causes and can be controlled with the use of monetary tools. While structuralists stated that inflation is a phenomenon that happens due to the unbalanced economic system, moreover, both monetary and fiscal measures should be used in order to understand the economic problems.

2.2 Empirical Literature Review

This section highlights the most important studies that dealt with the relationship between economic growth, unemployment, and inflation, and discuss whether Okun's law still holds as a rule or – is already broken down when considering new data or new variables inside the model.

El-hamidi and Wahba (2005), examined the impacts of structural adjustment on youth unemployment in Egypt and the extent to which reforms in the early 1990s have led to higher youth unemployment. Their empirical results showed that the increase in youth unemployment was the result of lining up for public jobs and the limited number of jobs in the private sector. Ahmad and Azım, (2010) investigated the youth employment market in Pakistan and showed that age, sex, marital status, migration, training, location, education level, and characteristics of the household had a major effect on youth employment. Bernal-Verdugo et al. (2012) employed a panel data analysis method to study the effect of crises, labor market policy, and unemployment on OECD countries' economies for the period of 1980-2008. They found that financial crises had a negative impact on unemployment in the short run. Accordingly, it was found that these effects were even larger for youth unemployment in the short, medium, and long run. Wajid (2013) investigated the impact of inflation and economic growth on unemployment of Pakistan using time series data for the period between 1973 and 2010. Augmented Dickey-Fuller test was applied to test unit root problem and Johansen – Juselius Maximum Likelihood approach was employed to find the long-run relationship among unemployment, inflation, economic growth, trade openness, and urban population, the results showed:

Inflation significantly increased unemployment in the long run;
Economic growth had a significant negative impact on unemployment,
The impact of trade openness on unemployment was significant in the short run.

Çondur and Bölükbaş, (2014) examined the relationship between youth unemployment, GDP and, inflation in Turkey for the period between 2000 and 2010 and found the existence of a unidirectional causality between youth unemployment, GDP, and inflation in Turkey for the period between 2000 and 2010 Thayaparan,(2014) investigated the effect of inflation and economic growth on unemployment in Sri Lanka for the period 1990-2012 using secondary data collected from the central bank of Nigeria. The Augmented Dickey-Fuller Test was used to test the stationary of variables. The ordinary least square technique was used to estimate the relationship and the Granger Causality test was applied to determine the causality among the above variables. The empirical results showed that (GDP) was stationery and unemployment and inflation had unit root problem or was non-stationary at level. And they became stationary at first difference. Regression results revealed that the coefficient of inflation was negative and had a statistically significant influence on unemployment whereas gross domestic product was positive without significant effect on unemployment. Finally, the study concluded that only inflation significantly reduced unemployment

and gross domestic product positively but insignificantly influenced unemployment. Causality results proved that there was only a unidirectional causality between inflation and unemployment but there was bidirectional causality between unemployment -gross domestic product and inflation- gross domestic product in Sri Lanka. Vermeulen, (2015) used Engle-Granger Error-Correction model, long-run trends, and short-run dynamics to investigate the effect of inflation and growth on employment in South Africa for the period of 1961-2014. The empirical results showed a positive cointegration long-run relationship between employment and high inflation. Dunsch, (2017) studied gender-specific youth unemployment developments in Germany and Poland using Okun's law. The purpose of their study was to test the hypothesis that young male employees were more vulnerable to the business cycle. They estimated gender- and country-specific Okun coefficients for five different age cohorts covering the 1992 to 2014 period. The results suggested that young women were less sensitive to the business cycle, while for men the reaction was much stronger. The study recommended that policymakers should design a policy beyond GDP growth, such as a reduction of the discrepancy in employment protection between preexistence temporary contracts and an approach to maintain youth connected to the labor market. BÖLÜKBA (2017) studied the effect of inflation and economic growth on youth unemployment in 20 emerging economies for the period between 1991 and 2016. They showed that inflation and economic growth had negative effects on youth unemployment and concluded that, for the selected emerging economies, positive rates of inflation and economic growth resulted in a decrease in youth unemployment.

3. RESEARCH METHODOLOGY

A huge number of studies found a negative relationship (Freeman 2001; Beaton 2010&others) while others found a positive one between economic growth and unemployment (Moses 2008; Kreishan 2011). The reason for these differences is related to the nature of economy of the country under study. This study aims to investigate the impact of economic growth on unemployment taking into consideration that the nature of economy of a country affects this relationship. For this reason, we will use a panel data for 16 countries from the ESCWA region covering the period 1991-2017. The nature of the economy of these countries is different and the rates of economic growth and unemployment rates or even inflation rates are different. This will enable us to understand the relationships intended to study in a better way. All data used for this study were collected from the World Bank Database. To test the impact of economic growth and inflation on unemployment, data on GDP, unemployment, and inflation were required. The impact of inflation and economic growth on youth unemployment was tested using the most suitable model to our study, the model of Mehmet Boloska described as:

$$YUN = \beta_{0it} + \beta_{1it}\, INF + \beta_{2it}\, GDP + £_{it}$$

Where (i) stands for country $(i = 1, 2, \ldots .16)$, t denotes time period $(t = 1991, 1992 \ldots 2017)$, UN, YUN, INF, GDP are youth unemployment, inflation and GDP growth of countries. β_0 is a constant term and £it is the error term.

Testing Cross Sectional Dependence and Homogeneity: Panel-data models are likely to reveal an essential cross-sectional dependence in the errors. This is due to the presence of common shocks and unobserved components that randomly cumulates into the error term, spatial dependence, and idiosyncratic pairwise dependence in the disturbances.i If the analysis is carried out without consideration of this situation, the results will be biased and inaccurate (Breush and Pagan,1980). To deal with this problem, this study will apply four tests: CDLM1 test developed by (Breush-Pagan, 1980), CDLM2 and CD tests developed by (Pesaran, 2004) and LMadJ test developed by (Pesaran et al, 2008). These tests are applied under the assumption of asymptotic normal distribution and under the following hypotheses:

$H_0 =$ No Cross-sectional dependence

$H_1 =$ Cross-sectional dependence

If the test result probability is less than 0.05, H_0 is rejected at 5% significance level and a cross-sectional dependence exists between the panel countries.

After testing the cross-sectional dependence, it is also important to test the homogeneity of the panel to determine whether the model has common or dynamic character for ESCWA'S countries. For this purpose, the study will apply the delta test developed by Pesaran and Yamagata (2008) with the following hypotheses:

H_0 =The panel is homogeneous

H_1 = The panel is not homogenous

If H_0 is not rejected at 5% significance level, this implies that the relationship is homogeneous.

Testing Panel Unit Root: If cross-section dependence is detected (H_0 is rejected at 5% significance level), the unit root test, cointegration and causality tests within the econometric analysis should take into consideration this problem. Second generation panel unit root tests, panel cointegration and panel causality methods heeding cross-sectional dependence will be used in the subsequent stages of the study. If this our case, the CADF (Cross-Sectionally Augmented Dickey Fuller) test developed by (Pesaran, 2007), known as the second-generation panel unit root test and taking into account cross-sectional dependence, will be used to determine the stationarity of the series. What distinguishes this method, is that the unit root test can be executed for each country in the panel. Hence, the stationarity of the series can be established for the whole panel and for each country. If the CADF statistical values are larger than the CADF critical values within the absolute value, the null hypothesis is rejected, and the series is considered stationary.

Testing Panel Cointegration: Pedroni proposed a test that allowed heterogeneity in the cointegration vector in cointegration analysis in 1997, 1999, 2000, and 2004 (Asteriou and Hall, 2007). This test not only allowed dynamic and stationary effects to be different between the cross-sections of the panel but also permitted differentiation of the cross-section of the cube under the alternative hypothesis (Güvenek ve Alptekin, 2010). Pedroni tests had some positive features which differed from McCoskey's and Kao's approaches in terms of cross-sectional hypothetical trends and zero hypotheses where there was no cointegration. Pedroni tests allowed multiple explanatory variables. The cointegration vector varied along with different parts of the panel. Errors allowed for heterogeneity across cross-sectional units. All these were expressed as positive features. The existence of a stationary relationship between nonstationary series was investigated using cointegration analysis. The long-term dual relationship between unemployment and economic growth was studied using Pedroni cointegration analysis. Panel co-integration test developed by (Pedroni, 2004) was applied to determine the co-integration between the series. In this context, Pedroni had developed seven statistical tests to determine whether cointegration existed between panel data. These tests were divided into two different categories. The first contained four tests pooled "within" dimension. The second had three tests in the "between" dimension (Asteriou and Hall, 2007). The first three of the four tests in the first category were non-parametric. The first test was a statistic in the type of variance ratio. The PhillipsPeron (PP) (rho) statistic and the PP (t) statistic were the second and third tests respectively. The fourth statistic was a parametric statistic like the Augmented Dickey Fuller (ADF) (t) statistic. In the second category, the three tests were similar to the PP (rho) statistic, while the other two were equivalent to the PP (t) and ADF (t) statistics. The null hypothesis of tests was "there is no co-integration between the series of panel data". The test showed that the series were co-integrated. Therefore, it can be clearly concluded that the series were moving together in a long-term period. The methods such as the panel dynamic ordinary least squares method can only be used to estimate long-run parameters. But estimates of short-term parameters also contain crucial pieces of information as well as long-term parameters. In this context, PMGE (Pooled Mean Group Estimation), MGE (Mean Group Estimation) and DFE (Dynamic Fixed Effect) create error correction models and predict both short-term and long-term parameters. This study will use PMGE and MGE methods to estimate cointegration coefficients according to Hausman test that considered MGE results to be more efficient than PMGE results.

4. RESEARCH FINDINGS

In this part, we analyzed empirically the impact of inflation and economic growth on youth unemployment for 16 countries belonging to the ESCWA region and discussed the findings. Firstly, and for this purpose we applied cross-sectional dependence and homogeneity tests.

Secondly, we included in the econometric analysis panel unit root, panel cointegration and panel causality tests.

4.1 Testing Cross-Sectional Dependence and Homogeneity

Table 1: Cross-sectional dependence test for unemployment

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	589.2459	120	0.0000
Pesaran scaled LM	30.28969		0.0000
Bias-corrected scaled LM	29.98200		0.0000
Pesaran CD	-2.322690		0.0202

Source: Author's calculations

Table 2: Cross-sectional dependence test for economic growth

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	207.1791	120	0.0000
Pesaran scaled LM	5.627387		0.0000
Bias-corrected scaled LM	5.319695		0.0000
Pesaran CD	6.053718		0.0000

Source: Author's calculations

Table 3: Cross-sectional dependence test for inflation

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	400.5358	120	0.0000
Pesaran scaled LM	18.10851		0.0000
Bias-corrected scaled LM	17.80082		0.0000
Pesaran CD	12.81503		0.0000

Source: Author's calculations

Table 4: Cross-sectional dependence test for the model

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	488.7373	120	0.0000
Pesaran scaled LM	23.80189		0.0000
Pesaran CD	-1.655940		0.0977

Source: Author's calculations

According to cross-sectional dependence test results, the $H0$ hypothesis under the assumption that there is no cross-sectional dependence for both series and the model was strongly rejected at the 1% significance level. In this case, we can confirm the existence of cross-sectional dependence between the panel countries. Based on this result, we can clarify that a shock seen in the level of young unemployment, inflation, and economic growth in ESCWA'S economies can affect other countries. When estimating panel models, Heterogeneity similar to that in a cross-sectional dependence test is important. Our second objective was therefore to test if the panel was homogenous. Hsiao 1986 test for homogeneity was used, and the results were presented in Table 4-5.

Table 5: Hsiao Test for homogeneity (1986)

Hypotheses	F-Stat	P-Value
H1	99.06429	1.4E-183
H2	1.966907	0.002175
H3	274.0571	3.7E-204

Source: Author's calculations

The homogeneity test results in the table were examined, the *H3* hypothesis considering that the panel was homogenous can be rejected. This result implied that the nature of the relationship studied in the model was partially common for panel countries and it didn't change across countries.

4.2 Testing Panel Unit Root

Table 6: Panel unit root tests with cross-sectional dependence: Pesaran-CIPS for unemployment

CIPS unit root test		
Null hypothesis: Unit root		
Test results:		
Statistic	t-stat	p-value
CIPS:	-2.69680	<0.01
Truncated CIPS:	-2.27783	<0.05
Critical values:		
Level	CIPS	Trunc. CIPS
1%	-2.44	-2.44
5%	-2.24	-2.24
10%	-2.13	-2.13

Cross-sectional ADF unit root test- Null hypothesis: Unit root for specified cross-section					
Test results:		CADF		Truncated CADF	
Cross-section	ADF lags	t-stat	p-value	t-stat	p-value
Bahrain	7	-0.97798	>=.10	-0.97798	>=0.10
Egypt	7	-3.42157	<0.05	-3.42157	<0.05
Iraq	7	-0.42369	>=.10	-0.42369	>=0.10
Kuwait	7	-0.44782	>=.10	-0.44782	>=0.10
Jordon	7	-3.02676	<0.10	-3.02676	<0.10
Lebanon	7	1.47267	>=.10	1.47267	>=0.10
Libya	7	-1.53776	>=.10	-1.53776	>=0.10
Morocco	7	-23.08564	<0.01	-6.19000	<0.01
Mauritania	7	-1.51498	>=.10	-1.51498	>=0.10
Oman	7	-2.74783	>=.10	-2.74783	>=0.10
Qatar	7	4.00203	>=.10	-6.19000	<0.01
Saudi Arabia	0	-1.63405	>=.10	-1.63405	>=0.10
Sudan	7	0.28982	>=.10	0.28982	>=0.10
Tunisia	0	-2.39541	>=.10	-2.39541	>=0.10
UAE	7	-5.09696	<0.01	-5.09696	<0.01
Yemen	7	-2.60289	>=.10	-2.60289	>=0.10
Critical values:					
Level		CADF		Trunc. CADF	
1%		-4.21		-4.21	
5%		-3.38		-3.38	
10%		-2.99		-2.99	
				Critical values	
T	N		1%	5%	10%
20	15		-4.34	-3.43	-3.02
26*	15		-4.21	-3.39	-3.00
30	15		-4.12	-3.36	-2.98
20	20		-4.32	-3.42	-3.01
26*	20		-4.19	-3.37	-2.98
30	20		-4.11	-3.34	-2.96
26*	16*		-4.21	-3.38	-2.99
(*) Interpolated critical value					

		Critical values		
T	N	1%	5%	10%
20	15	-2.47	-2.26	-2.14
26*	15	-2.46	-2.25	-2.14
30	15	-2.45	-2.25	-2.14
20	20	-2.40	-2.21	-2.10
26*	20	-2.39	-2.20	-2.11
30	20	-2.38	-2.20	-2.11
26*	16*	-2.44	-2.24	-2.13
(*) Interpolated critical value				

Source: Author's calculations

Panel unit root tests with cross-sectional dependence: Pesaran – CIPS- Series: EG		
CIPS unit root test-Null hypothesis: Unit root		
Test results:		
Statistic	t-stat	p-value
CIPS:	-11.66684	<0.01
Truncated CIPS:	-2.11859	>=0.10
Critical values:		
Level	CIPS	Trunc. CIPS
1%	-2.44	-2.44
5%	-2.24	-2.24
10%	-2.13	-2.13

Source: Author's calculations

Table 7: Panel unit root tests with cross-sectional dependence: Pesaran-CIPS for EGR

Test results:		CADF		Truncated CADF	
Cross-section	ADF lags	t-stat	p-value	t-stat	p-value
Bahrain	7	-168.87877	<0.01	-6.19000	<0.01
Egypt	7	-1.37478	>=.10	-1.37478	>=0.10
Iraq	0	-6.87395	<0.01	-6.19000	<0.01
Kuwait	7	0.03392	>=.10	0.03392	>=0.10
Jordon	7	-1.23913	>=.10	-1.23913	>=0.10
Lebanon	7	-1.11213	>=.10	-1.11213	>=0.10
Libya	1	-4.26821	<0.01	-4.26821	<0.01
Morocco	7	-0.68442	>=.10	-0.68442	>=0.10
Mauritania	7	1.48956	>=.10	1.48956	>=0.10
Oman	6	2.37118	>=.10	2.37118	>=0.10
Qatar	5	-3.76282	<0.05	-3.76282	<0.05
Saudi Arabia	0	-4.91756	<0.01	-4.91756	<0.01
Sudan	7	0.38586	>=.10	0.38586	>=0.10
Tunisia	7	-1.41698	>=.10	-1.41698	>=0.10
UAE	7	-0.83199	>=.10	-0.83199	>=0.10
Yemen	7	4.41074	>=.10	-6.19000	<0.01
Critical values:					
Level		CADF		Trunc. CADF	
1%		-4.21		-4.21	
5%		-3.38		-3.38	
10%		-2.99		-2.99	

		Critical values		
T	N	1%	5%	10%
20	15	-4.34	-3.43	-3.02
26*	15	-4.21	-3.39	-3.00
30	15	-4.12	-3.36	-2.98
20	20	-4.32	-3.42	-3.01
26*	20	-4.19	-3.37	-2.98
30	20	-4.11	-3.34	-2.96
26*	16*	-4.21	-3.38	-2.99
(*) Interpolated critical value				

		Critical values		
T	N	1%	5%	10%
20	15	-2.47	-2.26	-2.14
26*	15	-2.46	-2.25	-2.14
30	15	-2.45	-2.25	-2.14
20	20	-2.40	-2.21	-2.10
26*	20	-2.39	-2.20	-2.11
30	20	-2.38	-2.20	-2.11
26*	16*	-2.44	-2.24	-2.13
(*) Interpolated critical value				

Panel unit root tests with cross-sectional dependence: Pesaran - CIPS		
Series: INF		
Test results:		
Statistic	t-stat	p-value
CIPS:	0.16867	>=0.10
Truncated CIPS:	-1.11346	>=0.10
Critical values:		
Level	CIPS	Trunc. CIPS
1%	-2.44	-2.44
5%	-2.24	-2.24
10%	-2.13	-2.13

Source: Author's calculations

Table 8: Panel unit root tests with cross-sectional dependence: Pesaran-CIPS for inflation

Test results:		CADF		Truncated CADF	
Cross-section	ADF lags	t-stat	p-value	t-stat	p-value
Bahrain	7	-0.51654	>=.10	-0.51654	>=0.10
Egypt	7	-0.49880	>=.10	-0.49880	>=0.10
Iraq	7	-4.15110	<0.05	-4.15110	<0.05
Kuwait	7	-1.31739	>=.10	-1.31739	>=0.10
Jordon	7	-0.57086	>=.10	-0.57086	>=0.10
Lebanon	7	-1.25788	>=.10	-1.25788	>=0.10
Libya	7	-0.35528	>=.10	-0.35528	>=0.10
Morocco	7	0.60834	>=.10	0.60834	>=0.10
Mauritania	7	-0.55245	>=.10	-0.55245	>=0.10
Oman	7	-1.83909	>=.10	-1.83909	>=0.10
Qatar	7	-0.57024	>=.10	-0.57024	>=0.10
Saudi Arabia	7	-1.06924	>=.10	-1.06924	>=0.10
Sudan	7	-0.81857	>=.10	-0.81857	>=0.10
Tunisia	7	32.06568	>=.10	2.61000	>=0.10
UAE	7	-1.32629	>=.10	-1.32629	>=0.10
Yemen	7	-15.13153	<0.01	-6.19000	<0.01

Critical values:				
Level		CADF		Trunc. CADF
1%		-4.21		-4.21
5%		-3.38		-3.38
10%		-2.99		-2.99
		Critical values		
T	N	1%	5%	10%
20	15	-4.34	-3.43	-3.02
26*	15	-4.21	-3.39	-3.00
30	15	-4.12	-3.36	-2.98
20	20	-4.32	-3.42	-3.01
26*	20	-4.19	-3.37	-2.98
30	20	-4.11	-3.34	-2.96
26*	16*	-4.21	-3.38	-2.99
(*) Interpolated critical value				
		Critical values		
T	N	1%	5%	10%
20	15	-2.47	-2.26	-2.14
26*	15	-2.46	-2.25	-2.14
30	15	-2.45	-2.25	-2.14
20	20	-2.40	-2.21	-2.10
26*	20	-2.39	-2.20	-2.11
30	20	-2.38	-2.20	-2.11
26*	16*	-2.44	-2.24	-2.13
(*) Interpolated critical value				

Source: Author's calculations

The results in Tables (4.6; 4.7; 4.8) show that the dependent variable (YUN) and independent variable (GDP) were stationary since the CIPS calculated was less than the critical value and therefore the null hypothesis was rejected and it was considered that the series were stationary, while (INF) was not stationary. Furthermore, CADF test statistic results showed that stationarity of the series changed across the countries.

4.3 Testing Panel Cointegration

The unit root test was followed by the cointegration analysis. In this study, Pedroni Residual Cointegration test was selected as a second generation panel cointegration method.

Table 9: Pedroni Residual Cointegration Test statistic

Series: TYUN INF EG

Alternative hypothesis: common AR coefs. (within-dimension)				
			Weighted	
	Statistic	Prob.	Statistic	Prob.
Panel v-Statistic	-1.282157	0.9001	-1.941360	0.9739
Panel rho-Statistic	1.248115	0.8940	-0.215793	0.4146
Panel PP-Statistic	0.460216	0.6773	-2.502839	0.0062
Panel ADF-Statistic	2.543471	0.9945	-0.377975	0.3527
Alternative hypothesis: individual AR coefs. (between-dimension)				
	Statistic	Prob.		
Group rho-Statistic	1.649247	0.9505		
Group PP-Statistic	0.088869	0.5354		
Group ADF-Statistic	3.391054	0.9997		

Cross section specific results

Phillips-Peron results (non-parametric)

Cross ID	AR(1)	Variance	HAC	Bandwidth	Obs
Bahrain	0.653	0.032200	0.039352	7.00	26
Egypt	0.600	7.216046	8.149718	5.00	26
Iraq	0.029	0.351901	0.100345	25.00	26
Kuwait	0.801	11.12370	12.27060	8.00	26
Jordon	0.719	5.653762	6.628127	6.00	26
Lebanon	0.908	0.844810	1.021736	7.00	26
Libya	0.378	1.732131	1.707344	6.00	26
Morocco	0.746	9.252616	13.23066	7.00	26
Mauritania	0.340	0.001788	0.002220	5.00	26
Oman	1.099	0.025658	0.037592	5.00	26
Qatar	0.992	1.846039	3.756573	7.00	26
Saudi Arabia	0.472	3.619248	3.624530	5.00	26
Sudan	0.686	0.102241	0.207722	8.00	26
Tunisia	0.399	5.694413	5.883812	3.00	26
UAE	0.887	0.781878	1.278284	7.00	26
Yemen	0.752	7.568316	7.660719	3.00	26

Augmented Dickey-Fuller results (parametric)

Cross ID	AR(1)	Variance	Lag	Max lag	Obs
Bahrain	0.847	0.026548	1	--	25
Egypt	0.607	7.496725	1	--	25
Iraq	-0.281	0.329132	1	--	25
Kuwait	0.875	10.56179	1	--	25
Jordon	0.753	5.660689	1	--	25
Lebanon	0.856	0.775403	1	--	25
Libya	0.396	1.785312	1	--	25
Morocco	0.753	9.611762	1	--	25
Mauritania	0.489	0.001751	1	--	25
Oman	1.068	0.024494	1	--	25
Qatar	0.985	1.897568	1	--	25
Saudi Arabia	0.425	3.520521	1	--	25
Sudan	0.880	0.072268	1	--	25
Tunisia	0.423	5.507324	1	--	25
UAE	0.856	0.772552	1	--	25
Yemen	0.754	7.765647	1	--	25

Source: Author's calculations

The table above (4.9) shows that the $H0$ was not rejected according to Pedroni Residual Cointegration Test statistic. Therefore, the $H0$ assuming that there was no cointegration relationship is viable. So, it can be clearly said that the series were not moving together in a long-term period. Furthermore, there was no relationship between young unemployment, inflation and economic growth in ESWA'S economies. However, it is also critical to estimate cointegration coefficients in order to determine the direction of the relationship between variables. The results showed that the coefficient of inflation and economic growth on youth unemployment was negative but statistically insignificant and do not meet up with the theoretical expectation. This supported the results of Pedroni Residual Cointegration Test statistic that the series were not moving together in a long-term period.

4.4 Testing Panel Causality

After estimating the cointegration relationship between variables in the long- and short-terms, panel Granger causality test was also utilized in this study. Dumitrescu-Hurlin (2012) panel Granger causality test was chosen as panel causality test. The test provided more effective results than other panel causality tests since it estimated cointegration relationship

in both cross-sectional dependence and cross-sectional independence. The results of Dumitrescu-Hurlin (2012) panel Granger causality test are given in Table 4.23.

Table 10: Pairwise Dumitrescu-Hurlin panel Granger Causality test (lags: 2)

Null Hypothesis:	W-Stat.	Zbar-Stat.	Prob.
EG does not homogeneously cause TYUN	2.16538	-0.09151	0.9271
TYUN does not homogeneously cause EG	3.08049	1.38179	0.1670
INF does not homogeneously cause TYUN	2.76860	0.87966	0.3790
TYUN does not homogeneously cause INF	4.04969	2.94217	0.0033
INF does not homogeneously cause EG	2.58002	0.57605	0.5646
EG does not homogeneously cause INF	2.75687	0.86077	0.3894

Source: Author's calculations

In this model, Zbar statistic (Z_(N,T)^HNC) in Table 4.23 was considered as t was larger than n. In this context, there was a bidirectional causality relationship between youth unemployment and economic growth as well as between inflation and economic growth. While a unidirectional causality moved from inflation to youth unemployment. As a result, we concluded that the measures to be taken for inflation and economic growth might be effective in reducing youth unemployment in ESWA'S economies, but those two factors were not enough. Therefore, other factors should be taken into consideration.

5. CONCLUSIONS

Unemployment is a major problem experienced by all countries. It affects the population and the entire economy in different dimensions and directions. Governments policies aim to solve this problem by creating new jobs symmetric with the sustainability of economic growth. Youth are the most affected due to many reasons, the most important is the employment act applied by each country. This study analyzed empirically the impact of inflation and economic growth on youth unemployment for 16 countries belonging to the ESCWA region for the period from 1991 to 2017 using data collected from the World Bank data base. For this purpose, we applied cross-sectional dependence and homogeneity tests. Secondly, we included in the econometric analysis panel: unit root, panel cointegration and panel causality tests. Pedroni Residual Cointegration Test statistic showed that there was no relationship between young unemployment, inflation and economic growth in ESWA'S economies. So, it can be clearly said that the series are not moving together in a long-term period. Our results contradicted the results of Mehmet BÖLÜKBAŞ, which concluded that it was possible to say that inflation and economic growth substantially affected youth unemployment and the direction of the effect was negative on youth unemployment. That meant developments in inflation and economic growth decreased youth unemployment in selected emerging economies. Furthermore, in this context, the results of Dumitrescu-Hurlin (2012) panel Granger causality test indicated that there was a bidirectional causality relationship between youth unemployment and economic growth as well between inflation and economic growth. While a unidirectional causality moved from inflation to youth unemployment. The finding of this research will restrained by the methodology used to select the variables and the nature of the statistical data used in the analysis. The completion of this research requires increasing the number of variables; this will lead to increasing accuracy of the results and effectiveness of creating policies to be followed. Future studies should consider the effect of other control variables such as the economic crisis that happened in 2008 and its impact on the economies of the countries under study. The region relies heavily on the export of natural resources and the import of goods. Oil in these countries is considered an important factor in our study, for future studies we recommend dividing these countries into two categories: oil importing countries and oil exporting countries. Migration is an important factor that negatively affected unemployment since ESCWA countries were characterized by a high rate of migration. Therefore, it was necessary to know the number of immigrants and their impact on employment.

REFERENCES

- Bernal-Verdugo, M.L.E., Furceri, D. and Guillaume, M.D.M., 2012. Crises, labor market policy, and unemployment. International Monetary Fund.
- Bölükbaş, M., 2018. Do Inflation and Economic Growth Substantially Affect Youth Unemployment? Evidence from 20 Emerging Economies. Uluslararası İktisadi ve İdari İncelemeler Dergisi, pp.55-66.
- Cashell, B., 2006. Economic Growth, Inflation, and Unemployment: Limits to Economic Policy. Congressional Research Service.
- Ceylan, S. and Sahin, B.Y., 2010. Asymmetry in the relationship between unemployment and economic growth. Dogus University Journal, 11(2), pp.157-165.
- Christopoulos, D.K., 2004. The relationship between output and unemployment: Evidence from Greek regions. Papers in Regional Science, 83(3), pp.611-620.
- Dritsaki, C. and Dritsakis, N., 2009. Okun's coefficient for four Mediterranean member countries of EU: an empirical study. International Journal of Business and Management, 4(5), pp.18-26.
- Dunsch, S., 2017. Youth and gender-specific unemployment and Okun's law in Germany and Poland (No. 397). Discussion Paper.
- El-Hamidi, F. and Wahba, J., 2005. The effects of structural adjustment on youth unemployment in Egypt.
- Goussakov, R. and Stjernström, V., 2017. Estimating Okun's law in Sweden: Effects of gender and age.
- GÜLEL, F.E. and TUNCA, H., 2017. Investigation of youth unemployment in Turkey with spatial interaction. Unregistered Employment, p.108.
- Harris, R. and Silverstone, B., 2001. Testing for asymmetry in Okun's law: A cross-country comparison. Economics bulletin, 5(2), pp.1-13.
- Niranjala, S.A.U., 2019. Examining the Effects of Unemployment on Economic Growth in Sri Lanka (1991-2017). growth, 10(20).
- Shiyalini, S. and Bhavan, T., 2021. Impact of Inflation and Unemployment on Economic Growth: The ARDL Bounds Testing Approach for Sri Lanka. Himalayan Journal of Economics and Business Management, 2(1).
- Tesfaselassie, M.F. and Wolters, M.H., 2018. The impact of growth on unemployment in a low vs. a high inflation environment. Review of Economic Dynamics, 28, pp.34-50.
- Vermeulen, C., 2015. Inflation, growth and employment in South Africa: Trends and trade-offs. Economic Research Southern Africa (Ersa) Working Paper, 547.
- Wajid, A. and Kalim, R., 2013. The impact of inflation and economic growth on unemployment. 3rd International Conference UMT, Lahore.
- Xiao, J., 2009. The relationship between inflation and economic growth of China: empirical study from 1978 to 2007.
- Yelwa, M., David, O. O., & Awe, E. O. (2015). Analysis of the relationship between inflation, unemployment and economic growth in Nigeria: 1987-2012. Applied economics and finance, 2(3), 102-109.

[i] De Hoyos, R.E. and Sarafidis, V., 2006. Testing for cross-sectional dependence in panel-data models. Stata Journal, 6(4), p.482.