An Empirical Analyses of Unemployment Hysteresis and Natural Rate of Unemployment Approaches for MENA Countries

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ABSTRACT

This paper aims to test natural rate of unemployment and approach of unemployment hysteresis in MENA*** countries for the period of 1991-2014 by using panel data analysis methods which considering the cross-sectional dependency properties. Cross-sectional dependency test results indicate that there is cross-section dependency among all variables. According to CADF test results, unemployment rates in all countries have unit root. According to the CIPS test results, unemployment rates in MENA countries has unit root. In this context, all the impact of a shock can be seen on the unemployment rate in the mentioned region is permanent. Therefore; it can be said that the current approach of unemployment hysteresis in the region countries are valid.

Keywords: Natural Unemployment, Unemployment Hysteresis, MENA Countries, Panel Data Unit Root Analysis.

JEL Classification: C23, E24, E60.

İşsizlik Histerisi ve Doğal İşsizlik Oranı Yaklaşımlarının MENA Ülkeleri İçin Ampirik Bir Analizi

ÖZ

Bu çalışma, MENA Ülkelerinde doğal işsizlik oranı ve işsizlik histerisi yaklaşımlarını, yatay kesit bağımlılık özelliklerini dikkate alan panel veri analizi yöntemleri kullanılarak 1991-2014 dönemi için test etmeyi amaçlamaktadır. Yatay kesit bağımlılık testi sonuçları, tüm değişkenler için yatay kesit bağımlılığın olduğunu göstermektedir. CADF test sonuçlarına göre tüm ülkelerde işsizlik oranları birim kök içermektedir, CIPS test sonucuna göre ise MENA ülkelerinde işsizlik oranları birim kök içermektedir. Bu bağlamda bölgenin tümünde işsizlik oranları üzerinde görülebilecek bir şokun etkisi kalıcı olmaktadır. Bu nedenle; bölge ülkelerinde işsizlik histerisi yaklaşımının geçerli olduğu söylenebilir.

Anahtar Kelimeler: Doğal İşsizlik, İşsizlik Histerisi, MENA Ülkeleri, Panel Veri, Birim Kök Analizi.

JEL Sınıflandırması: C23, E24, E60.

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***MENA (Middle East and North Africa) expressed geographically the countries in the Middle East and in North Africa, Algeria, Bahrain, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Yemen, United Arab Emirates, Libya, Morocco, Oman, Palestine, Israel, Qatar, Saudi Arabia, Syria and Tunisia

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1. INTRODUCTION

The concept of unemployment is one of the discussion topics attracting sustained interest in economic theory. So it has developed various paradigms regarding the economics literature on unemployment cases. Recent studies, contributed to the enrichment of the literature in this area and change the definition of unemployment.

As it is known, the prevailing unemployment understanding in the economics literature was the voluntary unemployment which defined by classical economists until the 1929 economic crisis. According to this approach; the supply of labor which is determined by real wages and labor demand will always be equal and everyone will be able to find work who want to work at current wage levels. Besides, Always full employment is provided when labor supply is equalled to labor demand. In terms of Marxist approach which is completely rejecting the classic concept, unemployment is a systemic problem concerning the nature of capitalism. Unemployment is a systemic problem concerning the nature of capitalism. According to this approach, in the capitalist system, capital-owning class to create a pressure on already employees and for new investment continuously provide a reserve of unemployed army. Thus the capitalist system is able to finance new investments at low cost and have the ability to operate at very low wages of current employees.

Keynesian approach which developed involuntary unemployment, asserts that adrift market economy would be valid in the long term but it cannot find solutions to crisis that emerges in the short term. But Keynesian approach which advocated that solutions could not be found to the crisis which could arise in the short term develops the concept of involuntary unemployment. According to Keynes, who explaining the economic crisis of 1929 with the total lack of demand, Say's Law could not be applied in the short term. In the short term there are no strong trends which spontaneously balance the market mechanism. Even if the total supply equals total demand, this equality does not guarantee full employment. Because of that economy it may come to equilibrium in underemployment too. Under these conditions too just as after the crisis of 1929, involuntary unemployed cannot find work although he wants to work. The way to cease unemployment is the state intervention to the economy.

The study, about the relationship between the unemployment rate and annual wage in the United Kingdom, which is performed by William Phillips between 1861-1957. When this information is published in 1958, Keynes's followers thought that the finding of the analysis confirmed Keynes. Economists such as Richard Lipsey, Paul Samuelson and Robert Solo by regulating the variables in the Phillip's analysis by format of the rate of inflation and the unemployment rate they concluded that there is a relationship between the two variables.

But Milton Friedman, one of the leading exponents of monetarism, expressed that hypothesis based on the New Keynesian economist Edmund Phelps, a "natural rate of unemployment" the relationship between two variables only valid in the short term but it is invalid in the long term. According to this approach in the long-run Phillips curve will take a vertical position and even the economy at full employment the unemployment rate will be in the natural rate. To reveal the dynamic trends of unemployment, natural rate hypostasis of unemployment which is addressed by both Phelps and Friedman is important in terms of literature.

Stagflation crisis of the 1970s has led to the loss of validity of the entire exchange relationship which is thought to be present in the framework of Philips curve. After the process that school adopts the classical approach gained power İt can be said that the approaches, such as Supply Side Economics, New Classical Economics and Real Business Cycle Theory explain the unemployment is still on the basis of "voluntary" .

But naturally, after the 1980s, unemployment in the theoretical discussions and contributions did not end. For example, unemployment hysteresis opinion was characterized by study of economists such as Blanchard and summers (1986, 1987), Barro (1988) and Layard et al. (1991). "Hysteresis" concept which economics theory borrowed from the science, even the factors which led to the emergence of an event eliminated, it means that in the present case not to be returned to the initial conditions. For example, when an increase in the unemployment rate happened due to the reduction in total demand, the unemployment rate does not decrease again to its initial level despite the total demand increase. In this regard hysteresis approach is different from the natural unemployment approach, according to hysteresis approach, due to the current rigidities in the labor market, shocks on labor has lasting effects. In other words; any shock will affect the labor market, will increase the unemployment rate and It would reach a new equilibrium at a higher unemployment rate.

In the following period, the study and debate performed by researchers such as Pissarides (1990), Phelps (1999), Blanchard and Wolfers (2000) has brought a different dimension. In this regard, when an internal variable is taken the positive or negative market movements are inevitably affected. Economic shocks have permanent effects on unemployment and it is close to the natural rate of unemployment in the long term. This situation, it has been recognized as a special kind of the natural rate of unemployment and it has entered into literature as a structuralize approach (Güloğlu and İspir, 2011).

2. TEST OF NATURAL UNEMPLOYMENT RATE AND UNEMPLOYMENT HYSTERESİS

Studies which attempts to test the views of natural unemployment rate and unemployment hysteresis is presented in Table 1. When the literature table is examined ; it will be seen that the studies which has been done focused on continental Europe, the OECD countries and developed countries. Also, as a result of empirical applications which are performed consensus could not be reached about the opinion on natural rate of unemployment and unemployment hysteresis. In this situation the main reason is the differences in the empirical methods used.

Table 1: Table of Literature

Author (s)	Sample (period)	Results
Blanchard ve Summers (1986)	England, France, USA, Germany 1953-1984	Unemployment Hysteresis
Brunello (1990)	Japan 1955-1987	Unemployment Hysteresis
Roed (1996)	16 OECD countries in 1970-1994	Natural Rate of Unemployment for the US
		15 Unemployment Hysteresis in the country
Song ve Wu (1998)	15 OECD Country	Natural Rate of Unemployment
Arestis ve Mariscal (2000)	22 OECD countries in 1960-1997	9 Natural Rate of Unemployment in the country
		13 Unemployment Hysteresis in the country

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Table 1 (continuation): Table of Literature

Murray ve Pappell (2001)	17 OECD countries in 1955-1990	Natural Rate of Unemployment
Feve vd. (2003)	OECD countries in 1966-1999	8 Natural Rate of Unemployment in the country
		9 Unemployment Hysteresis in the country
Smyth (2003)	Australia States 1982-2002	Unemployment Hysteresis
Gray (2004)	England 1974-2002	Unemployment Hysteresis
Leon-Ledsama ve McAdam (2004)	27 European countries from 1991 to 2001	Natural Rate of Unemployment
Chang vd. (2005)	10 European countries from 1961 to 1999	Natural Unemployment Rate for 1 Country
		Unemployment Hysteresis for 9 Country
Camero vd. (2006)	19 OECD countries in 1956-2001	Natural Rate of Unemployment
Caporale ve Gil-Alana (2007)	US 1960-2004, 1970-2004 Japan, England 1970-2005	Long-Term Natural Rate of Unemployment in the US and Japan
		Unemployment Hysteresis in the UK
Camero vd. (2008)	8 EU countries in 1991-2003	Natural Rate of Unemployment in Structural Breaks in Test
		Unemployment Hysteresis in Structural not break test
Candelon vd. (2009)	US Economy Sub Sector 1982-2002	Natural Rate of Unemployment in the Long Term
Yılancı (2009)	Turkey 1923-2007	Unemployment Hysteresis
Güloğlu ve İspir (2011)	Turkish economy Sub Sector 1988-2008	Natural Rate of Unemployment
Arı vd. (2013)	East Asia and Pacific Countries	Natural Rate of Unemployment
Tokatlıoğlu vd. (2014)	15 European countries from 1988 to 2011	Weak Effect of Hysteresis
Doğru (2014)	12 EU countries in 1980-2012	Natural Rate of Unemployment in 9 country
Saraç (2014)	Turkey 2005(01)-2013(07)	Effect of Partial Hysteresis

3. MODEL, SAMPLE AND METHODOLOGY

Difference of this study from the studies presented in Table 1 is testing of unemployment hysteresis and natural rate of unemployment paradigm in the context of MENA Countries. MENA countries have experienced a fluctuating process of growth since 1960s and have faced significant structural problems in economic sense. High unemployment rate is one of the structural problems and it changes between %10-25 in region. According to the MENA-OECD investment program's data, MENA countries have to create 25 million (according to the World Bank calculations, this must be around 50 million) jobs in next decade in order to maintain the current unemployment rate. Above all, youth unemployment rate is around %25 and averagely 2.8 million young worforce includes to economy in MENA region ever year. (Makdisi et al., 2000; O'Sullivan et al., 2011). This study aims to test whether high unemployment rates are adopted as natural employment rate or test the validity of unemployment hysteresis in MENA countries.

In our study, approaches of natural rate of unemployment and unemployment hysteresis has been tested for MENA countries for the 1991-2014 periods by using Panel data analysis techniques that consider cross-sectional dependence which gives more reliable results. The countries which have been included in the scope of analysis are indicated in table 2. The percentage share of the unemployed in the total labor force was used as an indicator of unemployment. The unemployment data for the related countries was taken from a World Bank World Development Indicators online database. All variables have been linearized by taking the natural logarithms. The rest of paper has been organized as follows: i) chapter 3 introduces the model, sample, methodology and empirical results ii) chapter 4 concludes paper and gives policy offers.

Table 2: MENA Countries Which Included in the Analysis

Saudi Arabia	Qatar	Tunisia
Libya	Kuwait	Iran
Algeria	Egypt	Iraq
Bahrain	Jordan	Syria
Yemen	Lebanon	Oman
Morocco	United Arab Emirates	

However, the literature on panel data analysis emphasized that cross section dependence, the interaction between cross-sectional units, can arise owing to a variety of factors, such as omitted observed common factors and unobserved common factors, spatial spillover effects or general residual interdependence. In the presence of cross-sectional dependence, the feasibility of the first generation of panel unit root tests which may lead to biased inferences and hence misleading results owing to lower power of the unit root and cointegration test (Pesaran, 2004; Breitung and Pesaran, 2008; Baltagi *et al*, 2012; Westerlund and Breitung 2013,). Hereby, this study employs recently developed panel data methods that have more efficient estimators under the existence of cross-section dependence in the data.

3.1. Cross Section Dependence Analysis

This paper first aims to examine whether the variables are cross-sectional dependence or independence using the approaches developed by Breusch and Pagan (1980) and Pesaran (2004). Breusch and Pagan propose following cross-section dependence test which based on lagrange multiplier:

$$LM = T \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} (\hat{p}_{ij}^2) \sim X^2 \frac{N(N-1)}{2} \tag{1}$$

The LM test of Breusch-Pagan (1980) 's , when it is , N>T gives effective results and it tests the hypothesis of no correlation between sections. Lagrange multiplier which is used to test the hypothesis is calculated in this format and here the term is of $(\hat{p}_{ij}^2)$ here is the correlation coefficient of the error term. Secondly, this paper employs Pesaran's (2004) CD test for testing cross-sectional dependency. Pesaran (2004) proposes the following cross-sectional dependency test which is based on the average of pairwise correlation coefficients:

$$CD = \sqrt{\left(\frac{2T}{N(N-1)}\right)} \sum_{i=1}^{N-1} \sum_{j=i+1}^{N} \hat{p}_{ij} \tag{2}$$

where $\hat{\rho}_{ij}$ is the sample estimate of the pair-wise correlation of the residuals.

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Specifically,

$$\widehat{\rho}_{ij} = \widehat{\rho}_{ji} = \frac{\sum_{t=1}^{T} e_{it} e_{jt}}{\sqrt{\left(\sum_{t=1}^{T} e_{it}^2\right)\left(\sum_{t=1}^{T} e_{jt}^2\right)}} \tag{3}$$

Pesaran's test has $N(0,1)$ distribution for $N \to \infty$ and T sufficiently large. It is likely to have good properties for both N and T small.

Both tests' hypothesis are as follows:

H_0 : No Cross-Sectional Dependence.

H_1 : Cross-Sectional Dependence.

3.2. Stationarity Analysis

Owing to existence of cross-sectional dependency among unemlopment rates, this paper employs the Cross Sectionally Augmented Dickey Fuller (CADF) panel unit root test developed by Pesaran (2007).

Pesaran's (2007), CADF test which consider cross-sectional dependency applied to the following panel regression model and by using t-statistics of the estimated coefficients of the model, stationarity characteristics of the variable are analyzed (Pesaran, 2007: 267-269):

$$\Delta y_{i,t} = a_i + b_i y_{i,t-1} + c_i \overline{y}_{i,t-1} + d_i \Delta \overline{y}_{i,t-1} + e_{it} \tag{4}$$

In this method, hypothesis of "each cross-section is not stationary" is tested against the hypothesis of "A portion of the cross-sections are stationary".

H_0: $\hat{b}_i = 0$, for all cross-sections.

H_1: $\hat{b}_i < 0$, $i=1,2...,N_1$, $\hat{b}_i = 0$, $i=N_1+1, N_2+2,...,N$.

Under the null hypothesis of unit root, the cross sectionally augmented IPS (CIPS) test depends on the simple average of the individual (CADF$_i$) statistics. The CIPS test is defined by

$$CIPS = \sum_{i=1}^{N} \frac{CADF_i}{N} \tag{5}$$

Both tests critical values for different N and T are obtained by Monte Carlo simulations. Pesaran (2007) gives critical values of CIPS in Tables II (a)–II(c).

3.3. Analysis Results

Cross- section dependency test results are presented in Table 3. According to the results, hypothesis of there is no cross-section dependency is strongly rejected with 1% level of significance. In this context, it can be said that, series are cross-sectionally dependent. Therefore, it is possible to say that if any shock may occur on unemployment rates in any countries can affects unemployment rates of other countries.

Table 3: Cross Section Dependence Test Results

Tests	Unemp
CD LM1 (Breusch-Pagan 1980)	184.531 (0.004)
CD Test	2.943 (0.002)

CADF unit root analysis results are presented in Table 4. According to the results of individual analysis, the individual unemployment series in MENA countries have unit root at %1 significance level. In these countries, it can be said that the impact of shocks on unemployment is permanent. For whole panel, when CIPS statistics test considered at 1% significance level, the unemployment rate has unit root in MENA countries. So, it is reached to the conclusion that the impact of shocks on the unemployment rate are permanent.

4. CONCLUSION

In this study, approaches of natural rate of unemployment and unemployment hysteresis have been tested for MENA countries for the 1991-2014 periods by using panel data analysis techniques that consider cross-section dependency which give more reliable results. The results can be summarized as follows:

i) Unemployment rates are cross-sectionally dependent. In this context, any change in the unemployment rate experienced in any one of MENA countries also affects the unemployment rate in other MENA countries.

ii) The individual unemployment series in MENA countries have unit root at 1% significance level. It can be said that the impact of shocks on unemployment rates in these countries are permanent and this suggest that the unemployment hysteresis approach is valid in MENA countries.

iii) When the Panel considered for all MENA countries, it is concluded that the unemployment rate has a unit root at 1% significance level. If these results are evaluated in terms of the whole region, the effect of a shock which takes place on the unemployment is permanent; this situation indicated that the opinion of unemployment hysteresis for the countries in the region is valid.

In the context of Syria and Iraq's analysis even though the result of the conclusion indicate that the unemployment rate is not stationary but this may causes to misleading conclusions because of internal conflicts which have been taking a long time in these countries. In both countries, existence of slowed economic activity for long period can be considered to cause fluctuations on the unemployment rate. When the stable social and economic order is established in the countries, more accurate results can be achieved in the coming years.

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Table 4: CADF Unit Root Test Results

Unemp	Trend and Constant
	CADF-Stat
Qatar	-2.34
Oman	-3.59
United Arab Emirates	-3.41
Kuwait	-2.16
Egypt	-1.41
Jordan	-2.80
Libya	-1.98
Lebanon	-3.34
Morocco	-1.63
Tunisia	-3.19
İran	-2.79
Bahreyn	-2.68
Iraq	-4.48
Saudi Arabia	-2.41
Morocco	-1.49
Syria	-4.48
Yemen	-3.94
CIPS-Stat	-2.83
Critical Values CADF)	%1 -4,98
	%5 -3,99
	%10 -3,54
Critical Values (CIPS)	%1 -3,01
	%5 -2,78
	%10 -2,67

Maximum lag length determined as k=1 according to Schwarz Bayesian Information Criterion (SIC). Critical values have been taken form Pesaran (2007).

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