The Relationship between Youth Unemployment and Economic Growth in Central and Eastern European Countries: An Empirical Analysis

İsmet GÖÇER

Adnan Menderes University, Faculty of Economics in Aydin, Department of Econometrics, igocer@adu.edu.tr

Leman ERDAL

Sorumlu Yazar, Adnan Menderes University, Faculty of Economics and Administrative Sciences in Nazilli, Department of Labor Economics and Industrial Relations, lerdal@adu.edu.tr

Abstract
The study has analyzed the relationship between youth unemployment and economic growth, in the context of Okun law, by using new generation panel data analysis and cointegration tests. In this study, 18 Central and Eastern European country have been selected as subject matter whose youth unemployment rate is above the EU-28 average (25 %) for the period 2006-2012. The results show that, if youth unemployment is quite severe; even an exclusive economic growth will not be enough to reduce the youth unemployment rate in the country. It is recommended that the global and country-specific policies which are effective, result-driven on youth (Un) employment and labour market issues, should be developed. This study is expected to make a significant contribution to the literature on unemployment and social conflict.
Keywords: Youth Unemployment, Social and Political Problems, Central and Eastern European (CEE) Countries.
JEL Classification Codes: E24, J64, R11.

Orta ve Doğu Avrupa Ülkelerinde Genç İşsizliği ve Ekonomik Büyüme Arasındaki İlişki: Ampirik Analiz

Öz
Çalışmada, genç işsizliği ve ekonomik büyüme arasındaki ilişki, yeni panel veri analizi ve eşbütünleşme testleri kullanılarak, Okun Yasası kapsamında, analiz edilmiştir. Çalışmanın konusunu genç işsizlik oranı AB (AB-28) ortalamasının üzerinde olan 18 Merkezi ve Doğu Avrupa ülkesi oluşturmaktadır. Çalışmanın sonuçları, genç işsizliğini derin yaşayan bir ülkede, ekonomik büyümenin, genç işsizliğini azaltmada tek başına yeterli olmayacağını göstermektedir. Küresel ve ülke koşullarına has; genç istihdamı ve piyasa üzerinde etkili sonuç verecek politikaların geliştirilmesi tavsiye edilmektedir. Çalışmanın işsizlik ve sosyal çatışma konusundan yapılan çalışmalara önemli bir katkı sağlaması beklenmektedir.
Anahtar Kelimeler: Genç İşsizliği, Sosyal ve Siyasal Sorunlar, Orta ve Doğu Avrupa Ülkeleri.
JEL Sınıflandırma Kodları: E24, J64, R11.

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1. Introduction

The globalization and economic integration have been brought together by its benefits and costs such as mobility of labour and other factors of production. While the globalization of competition through trade and investment. The technological advances in both information and communication have generated income and improved welfare in some parts of the world; for some others it has been a source of persistent inequality and social exclusion.

Global competition and some challenges faced by companies when conducting business internationally, have forced the firms to shift their manufacturing operations to the areas where they can minimize operating, maintenance and fuel costs (Morris, 2006). For example, China as a response against high labour costs in Europe, offered cheap energy and labor force, exploitation of natural resources and tax exemptions to the foreign companies for direct investment from Europe to China. Hence, many European and United States (U.S.) originated firms started to shift their manufacturing operations to China, right after the outsourcing process/trade openings in 1978 and especially China's entry into the World Trade Organization. It is argued that these privileges provided by China and high labour costs became key factors raised the unemployment rate in Europe and US. Moreover it is considered that shifting the production process to China has become one of the major cause of the 2008 global economic crisis and high unemployment rates in the US (Koruca, 2009).

In conformity to the Okun Law, it has been suggested that the increased economic growth reduces unemployment in the country. Matsumoto et al. (2012) analyzed the impact of macro-economic determinants on youth employment. The results of econometric investigation, on the demand side, concluded that the higher the investment, the lower the youth unemployment rate in both industrialized and low- and middle-income economies. In turn, investment is dependent on access to and the cost of credit: when banks are reluctant to lend, or lend only at high interest rates, enterprises face serious impediments in doing business and recruiting young workers. Macroeconomic policies are accepted as a significant tool to remove barriers and constraints to private sector that is expected to create more employment opportunities for youngsters. Policies put into place legal regulations to support the infrastructure of safe, organized, nondiscriminatory work place. They offer fiscal incentives to enhance competitiveness of enterprises operating in certain sectors that have high potential in youth employment. Similarly, measures aim to improve financial inclusion in compliance with legal regulations on infrastructure, are likely to stimulate labour demand and generate new employment opportunities for youngsters. It is expected that fiscal incentives and measures will encourage enterprises who provide work experience to young people, so that a significant increase on youth employment will also come afterwards (ILO, 2013).

The International Labour Conference (ILC) resolution, which was adopted by representatives of governments, employers' organizations and trade unions of the 185 member States of the ILO in June 2012, provides a global framework to help countries who want to shape their national strategies based on a multi-pronged and balanced approach. The framework covers macroeconomics and growth policies that support youth employment by encouraging economic diversification and development of sectors that are conducive to create jobs for youngsters (ILO, 2013). At the end of the ILC, a call for action against "the youth employment crisis" was made and   five main policy areas were determined in order to support job creation. The policy areas include (ILO, 2013)

- to increase aggregate demand and improve access to finance,
- to ease school-to-work transition and to prevent skills mismatches,
- to target employment of disadvantaged youth in labour market policies,
- to assist potential young entrepreneurs and self-employment,
- to ensure labour rights that are based on international labour standards.

It is required that the governments should be aware of this problem and must take the necessary measures as soon as possible. Recently a significant increase in youth unemployment has been observed in European countries as a result of newly created employment positions by the green economy, health and social care, and information and communications technology. They have been identified as having a high job-creation potential in Europe. After the 2008 economic crisis, these countries did experienced very low or negative growth rates, due to effective policies designated to reduce youth unemployment.

In Turkey, some kind of new policy applications, which were introduced in April 2009, regarding the reduction of (youth) unemployment may be seminal for other countries issues. These are reductions in social security contributions, the payment of the entire or a specific part of social security contributions of newly hired workers by state institutions/authorities for a certain period of time, providing credit facilities to the company that will create new employment, providing the fixed-term (6 months) public, training and skills development courses for employment, workplace training projects are among some policy instruments to reduce unemployment.

In fact this is both a general popular expectation of public opinion and misinterpretation of existing literature about this issue. However, this popular expectation and misinterpretation may not always be valid or sufficient. For example, shortly after the global economic crisis in 2008, although the economy grew around 9%, a notable decline in the unemployment rate did not occur in Turkey. Experts state that incresased productivity through high-technology has allowed economic growth

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without reducing unemployment or maintaine level of employment. This is an economic phenomenon, called as "jobless recovery (unemployment recovery) or jobless growth (unemployment)".

After the 2008 global economic crisis, high youth unemployment figures, experienced by European countries, especially Greece and Spain, have been increasingly troubled by its concerns of social explosion. Recent statistics indicate that the youth unemployment rate has reached 50 % in Greece and Spain; 30 % in Slovakia, Ireland, Italy, Portugal and 23.5 % in EU28 in the first quarter of 2013. It is stated that a high unemployment rate of the 15-24 age group has gained momentum immigrant-native racial conflict both in Germany and France in the last decade (Eurostat, 2014).

In 2010, it was accepted that 29 % of the youth unemployment experienced in Tunisia has caused social explosion that triggered the Arab spring spreading to the whole region (Springborg, 2011). Hence Bosnia and Herzegovina, has reached much more critical values as a result of a 60 % youth unemployment rate and a € 420 average monthly pension. It is observed that, in February 2014, in the city of Tuzla, public employees began to protest the privatization of some factories and non-payment of their salary (Eurostat, 2014). The economic crisis in 2008, contractionary nature of the fiscal austerity programs in the Eurozone, UK and uprising in some Arab states have reinforced policy interest in tackling youth unemployment.

In 2013, the global youth unemployment rate, reached 12.6 % which was 1.1 % above the pre-crisis level (11.5 %) in 2007. The global youth unemployment rate is projected to rise to 12.8 % with growing regional disparities, as expected improvements in advanced economies will be offset by increases in youth unemployment in other regions, mainly in Asia by 2018 (ILO,2013). In recent years, youth unemployment rates in European countries have reached a much higher level. Table 1 shows the youth unemployment rate in the selected countries.

As shown in Table 1, the youth unemployment rate has reached dangerous proportions in Bosnia and Herzegovina, Spain, Greece, Croatia, Italy, Kosovo, Portugal and Serbia. It is recommended that urgent measures should be taken considering 25 % of the EU's average. The possibility of provocation is quite high among unemployed youngsters especially in Bosnia-Herzegovina and Kosovo where ethnic diversity is higher. Greece, Spain, Portugal and Ireland, are countries struggling against economic crises and should bend the problem of unemployment among youth citizens.

The study investigates relationships between youth unemployment, and economic growth in the context of Okun law, by means of new generation panel data analysis methods and cointegration tests. The paper is structured as follows. The

next part, presents a summary of empirical literature, social and political impacts of youth unemployment and the data of youth unemployment in selected European countries. The third part provides data and methodology followed by the fourth part with an empirical analysis, estimations and results of the study. The final part presents, a summary and concluding policy proposals.

Table 1: Youth Unemployment Rates

	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Bosnia and Herzegovina	62.4	58.6	47.3	48.9	57.6	57.5	62.8
Greece	25.2	22.9	22.1	25.8	32.9	44.4	55.3
Kosovo	75.5	70.0	73.0	73.0	65.1	62.7	55.3
Macedonia, FYR[1]	59.7	57.8	56.4	55.1	53.7	55.3	53.9
Spain	17.9	18.2	24.6	37.9	41.6	46.4	53.2
Serbia	47.9	43.7	35.2	42.5	46.2	50.9	51.1
Croatia	28.9	24.0	21.9	25.1	32.6	36.1	43.1
Montenegro		38.4	30.4	35.6	45.5	37.0	41.1
Portugal	16.2	16.6	16.5	20.0	22.3	30.1	37.6
Italy	21.6	20.3	21.3	25.4	27.8	29.1	35.3
Slovak Republic	26.6	20.1	18.8	27.3	33.6	33.2	34.0
Ireland	8.6	9.0	12.7	24.0	27.6	29.0	30.4
Latvia	12.2	10.7	13.1	33.6	34.5	31.0	28.4
Bulgaria	19.5	15.1	12.7	16.1	23.2	25.0	28.1
Hungary	19.1	18.0	19.9	26.5	26.6	26.1	28.1
Cyprus	10.0	10.3	9.0	13.7	16.6	22.3	27.8
Poland	29.8	21.7	17.3	20.7	23.7	25.8	26.5
Lithuania	9.8	8.2	13.4	29.3	35.1	32.3	26.4
European Union	**18.5**	**16.4**	**16.3**	**20.8**	**22.1**	**22.9**	**25.0**

Source: World Bank (2014) (http://data.worldbank.org/indicator).

2. Literature Review on Social and Political Effects of Youth Unemployment

If stability of an economy begins to deteriorate, the unemployment problem emerges and its immediate impact can be observed on young generation who are usually the first to be laid off. Actually it is suggested that, historically "*young people have always had a tough time finding work*" and they may suffer from a long-term scarring effect, if they do not participate in a smooth transition to the labour market. During economic downturn, as it did in the 2008 crisis, youngsters hardly find or retain a job due to their relative "*lack of experience*" on the labour market. Yet, being unemployed at an early stage of working life, can negatively affect their long-run earning prospects and job opportunities (Matsumoto etal.2012). The youth unemployment can also cause psychological and economic difficulties profoundly affecting the whole life of young people as well as a significant GDP gap in the country; it is an important problem to be solved both

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for the sake of young people and the future of the country (Karataş, 1996; Karlsen, 1997).

The youth unemployment has economic, social and political factors as well as costs to communities, families and individuals such as *foregone output, increased poverty and social exclusion*. The youth unemployment or/and underemployment results, substantial decrease in output/income worsens the problem of the working poor. The unemployed youngsters are more likely to feel excluded from society and lose their individual sense of self-esteem. When they enter into the labour market in depressed circumstances, they are more likely to have difficulties that can lead them to crime and unrest, throughout their working life (Morris, 2006). The unemployed young generation who are discouraged or working under poor conditions, give up job seeking. They suffer from psychological disorder that may lead them to lose self-confidence, respect for society and may tend them to rebel against laws, authority and even the state. Although the economic impacts of unemployment which appears as income loss, can be compensated to some extent by means of insurance and financial support by family members; the social impacts such as hopelessness, fear, insecurity, poverty are said to be permanent (Ataman, 2000).

It should be emphasized that the issue of social consequences of youth unemployment is much more important than the economic consequences. It is a fact that constantly being disappointed about future employment prospects and deprived of a decent job, may lead youngsters to suffer from lifelong behavioral disorders (Meijers & Riele, 2004). Unemployment is creating a feeling of uselessness, idleness among youngsters and excludes them from society. It is argued that as an important indicator of social exclusion, a significant two-way relationship between social exclusion and unemployment should not be overlooked (Erdayı, 2009).

In some studies unemployment is considered to be the real reason behind racism and xenophobia. Morris (2006) states that social structures within society may pressure citizens to commit crime in accordance with the *strain theory* both in criminology and sociology of science. High unemployment can encourage xenophobia and protectionism. If citizens become unemployed, they have less disposable income than before and accuse foreigners of stealing their jobs, tend to use violence against them and may even exhibit aggressive behavior (Eurobarometer, 1997; Austin, 2009; Muigai, 2012).

Some studies state that, long-term unemployment rates are the most important reasons behind oppressive attitudes towards blacks in the USA and street clashes initiated by immigrants after a pouring violence against immigrants in France. Some other studies state that there is a high correlation between long-term unemployment and crime, alcohol and drug use. The high unemployment rates, especially among young people, make people more vulnerable to criminal

elements due to being easily manipulated by criminal organizations; charged with being involved in a crime or suffering from health problems because of alcohol and/or the use of drugs (Kapuscinski et al., 1998; Almén, 2011; Fallahi et al., 2012; Andersen, 2012; Nichols et al., 2013).

After the Great Depression in the United States in 1929, the unemployment rate skyrocketed from 3.2 % to 25 % in 1933, industrial production decreased almost 50 % in the U.S and European countries; the volume of world trade has shrunk by one third and its economic value decreased by two thirds significantly. The impact of great depression which had been observed in Germany, Japan and Italy, switching the political power with a new ruling body; i.e. the dictatorship has taken the place of democratic governments. It should be noted that this kind of danger is applicable in every period. Recently, a particular effect of the economic crisis and rising unemployment rates can be observed as a skyrocketed jump in extreme right-wing votes. The extreme right-wing parties began to increase their votes or began to be in power in many European countries including France, The Netherlands, Denmark, Finland and Germany. The Golden Dawn Party which is known as a racist-fascist party, surprisingly became the country's third largest party in Greece for the first time and managed to send its representatives to the European Parliament (Mankiw, 2007; Örmeci, 2014).

The Arab Spring events, starting in Tunisia spreading to all regions were caused by a 26-year-old Mohammed Bouazizi who was a Tunisian street vendor who set himself on fire on 17 December 2010, in protest of the confiscation of his wares; and the harassment and humiliation by police. His protest became a catalyst for the revolution in Tunisia followed by a wider Arab Spring, inciting demonstrations and riots throughout Tunisia in protest of social and political issues in the country (Ekopolitik, 2012). On 14 January 2011, after Bouazizi's death, the anger and violence intensified, leading then-President Zine El Abidine Ben Ali to step down after 23 years in power. The unemployment rate among young people was 29 % during these demonstrations and riot events. The youngsters became very well organized by social networks such as Facebook, Twitter and provoked the popular protests, actions that spread to 18 countries in the region (World Bank, 2014). While political power has switched with a new ruling body in Tunisia, Egypt, Libya, Yemen, some economic and social rights have been given to the public by ruling authorities in Jordan; Oman, Saudi Arabia, Morocco and Bahrain (Springborg, 2011). Unfortunately civil war is still going on in Syria and Iraq.

Edmark (2003) examined the relationship between unemployment and crime rates, for a period from 1988-1999, by using panel data analysis in Sweden. Fallahi et al. (2012) and examined the cointegrated or long-run relationships between the unemployment rate and its volatility on burglary and motor-vehicle theft. His findings have strong evidence and states that "*unemployment has a*

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positive and significant effect on burglary, car theft and bike theft". Fallahi et al. (2012) found similar results stating that "*the unemployment rate has a significant effect on burglary and motor-vehicle theft only in the short run and the unemployment volatility has a negative effect on motor-vehicle theft regardless of time span*". However, it has a positive effect on burglary in the short run, and no effect in the long run.

Fougère et al. (2006) analyzed the relationship between youth unemployment and crime, for the period from 1990-2000 in France by using cross-section analysis. According to the results of study "*dimensions of crime and unemployment are positively related. Any increases in youth unemployment induce increases in crime*". They used "*the predicted industrial structure to instrument unemployment*" and show that this effect is causal for burglaries, thefts, and drug offences.

Baron (2008) had examined the role of unemployment in the criminal behavior of 400 homeless youths and has put forward the relationship between unemployment, street youth and crime in Canada. The results state that, when the unemployment rate increased by 1 %; the rate of participation in criminal activities increase by 0.141 %.

Grönqvist (2011) investigated long-term relationships between youth unemployment and crime in Sweden, by using the fixed effects model for the data of the period 1985-2007. The results show that "*Being unemployed between 1 and 90 days is associated with a 1.93 % increased risk of committing crime*", "*Individuals who have been unemployed for more than 180 day are 6.19 % more likely to commit crime*". The results are important for providing the time dimension of the relationship between unemployment and crime.

Ajaegbu (2012) has investigated the relationship between rising youth unemployment and violence, in Nigeria with the help of the deprivation theory developed by Ted Gurr. The results state that "*If factors that create the feeling of deprivation and frustration created by unemployment are addressed. then Nigeria's youth will not engage in violent crimes*". He suggests. as a policy proposal, that "*if more business opportunities for young people are created, violent crimes can be prevented in the country*".

Alabi (2014), revealed the relationship between the high unemployment rate among young people and crime control in sub-Saharan Africa. He has determined that, in general, a consistently high rate of youth unemployment in the community leads to the spread of HIV, kidnapping, drug use and trafficking, the violent protests against immigrants and abetting young people to crime. The study states that there is a relationship between unemployment, poverty and crime, when people cannot earn their income from legally, legitimately and socially acceptable work and they turn to illegal activities. During a high unemployment period, some

social problems become more severe, such as prostitution, robbery, alcoholism, domestic-violence, social, religious and civil unrest.

Torruam & Abur (2014) studied the relationship between crime, unemployment and inflation rates in Nigeria by using the Johansen cointegration analysis for the period of 1980-2011.

One of the primary goals of the public policies is to reduce the youth unemployment as a solution for social problems. The youngsters should be accepted as a priority group to put into the programs for both unemployment and poverty reduction. However, it is not possible to realize this priority only by increasing economic growth. Therefore, it should be given an importance to "*increase jobs through small enterprises and poverty alleviation schemes* "and "*the provision of the right skills to youth*" (Torruam & Abur, 2014). Thus, youth unemployment requires urgent attention due to possessing grave economic and social problems not only for the above mentioned countries, but also any other countries.

3. Data and Methodology

In this study, 18 European countries[2] have been selected as subject matter whose youth unemployment rate is above the EU-28 average (25 %) for the period 2006-2012.

The data of the growth rate were used in two different analyses. The most important constraint for the study is that we could not get the data of eight countries for the period prior to 2006. These countries are those which had broken up from the Socialist Federal Republic of Yugoslavia after dissolution in 1992. Therefore, we developed a second analysis by using the data of 10 countries, which have a relatively longer time size (the countries over*) for the period 1996-2012. In order to separate these analyses from the first estimation, the (*) have been put on data. Here;

g; stands for growth rate,

YU; stands for data of youth unemployment rate.

The economic growth is a significant factor to reduce the unemployment rate. Arthur Okun analyzed the relationship between economic growth and the unemployment rate for the past World War II period in American economy. Okun's law, as one of the first empirical studies, had observed a relationship between unemployment and real GDP or GNP growth. It states that "*a one point increase in the cyclical unemployment rate is associated with a two percent decrease in real GDP growth"*. The features of relationship between economic

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growth and the unemployment rate differs according to the country and the time-period specific conditions. The equation used in Okun's Law;

$$\Delta U_t = \beta(g_t - \bar{g}_t) \tag{1}$$

Here;

$\Delta U_t T$; *the change in unemployment rate*

g_t; *the rate of economic growth in the current period*,

$\bar{g}_t$; *Represents the average economic growth rate during the period of the analysis.*

Okun (1962), estimated the model for the data of the period 1948-1960 in U.S. economy and used following equation:

$$\Delta U_t = -0.5(g_t - 2.25) \tag{2}$$

The equation represents that each of the 2.25 % increase in economic growth (output) is associated with a 0.5 decline in the rate of unemployment.

Analysis 1 and Analysis 2

The study tries to determine the relationship between economic growth and the youth unemployment in the sense of a similar approach to Okun Law. The following econometric analysis will be used in this context:

$$\Delta YU_{it} = \beta_{0i} + \beta_{1i}(g_{it} - \bar{g}_i) + u_{it} \tag{3}$$

Each YU_{it}; shows the variation in the rate of youth unemployment.

$$g_{it} - \bar{g}_i = TD \tag{4}$$

TD: shows the trend deviation from trend growth and will be shown as (*TD*) in the following sections. The study has used two different analyses for two different periods which are 1996 to 2012 and 2006-2012 periods.

The relationship between youth unemployment and economic growth has been analyzed in this study and the Equation (3) is used for both the Analysis 1, which estimated data of 2006-2012 for 18 countries, and the Analysis 2, which estimated data of 10 countries for the period of 1996 to 2012.

4. Estimations and Results

4.1. Panel Unit Root Tests

In this study Levin, Lin & Chi (2002) (LLC), IM, Pesaran & Shin (2003) (IPS) and Hadri (2000) tests have been employed to investigate the stationary level of series. The first test assumes that panel cross sections are homogeneous; the second one assumes that they are heterogeneous. While LLC and IPS tests' null hypothesis is accepted as "*series is not stationary*"; the Hadri test's null hypothesis states that "*series is stationary*" and it provides a "*proofing*" for other tests. Here, taking into consideration all possible situations, a combination of three tests has been used. The panel unit root tests and the results are presented in Table 2.

Table 2: Panel Unit Root Tests Panel Unit Root Tests

	YU	*TD*	*ΔYU*	*ΔTD*	*YU**	*TD**	*ΔYU**	*ΔTD**
LLC	3.52 (0.99)	1.60 (0.94)	-3.82 (0.00)*	-6.82 (0.00)*	1.08 (0.86)	0.086 (0.53)	-6.17 (0.00)*	-8.68 (0.00)*
IPS	3.60 (0.99)	-0.39 (0.34)	-3.83 (0.00)*	-1.88 (0.029)**	0.34 (0.63)	-1.059 (0.14)	-1.55 (0.059)***	-7.11 (0.00)*
Hadri	5.83 (0.00)	1.66 (0.048)	1.00 (0.15)*	-0.19 (0.57)*	3.37 (0.00)	4.00 (0.00)	0.38 (0.35)*	-0.71 (0.76)*

Note: The given values are the corresponding test statistics, values in parentheses are probability. *, ** and *** indicates the stability at the level of significance 1 %, 5 % and 10 % level respectively.

It is observed as shown in Table 2 that, the variables are non-stationary at level one and after the first difference, they became stationary that is they are *I(1). It means that the trend deviations of young unemployment and economic growth rates are not stable.* Hence, it is considered that the sustainability of such policies should be revised.

4.2. Panel Cointegration Tests

In this study, the existence of cointegration between the series were examined by using Kao (1999) and the Perdroni (2004) tests. Pedroni (2004) had evaluated seven tests statistics in order to estimate the existence of cointegration between the series of panel data. The null hypotheses for the tests evaluated by Pedroni (2004) and Kao (1999) "*there is no cointegration between the series of panel data*". The results of panel data co-integration analysis are shown in Table 3.

The results in Table 3 show that the series are said to be cointegrated. That is, the series are moving together in a long-term period and the estimations used for these series, at level one, do not have any pseudo-regressions.

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Table 3: The Panel Data Cointegration Results

		Analysis 1		Analysis 2	
		Test Statistics	Probability Value	Test Statistics	Probability Value
Pedroni	**Panel v-Statistics**	1.41	0.07***	1.82	0.03**
	Panel ρ-Statistics	3.20	0.99	0.22	0.58
	Panel t-Statistics	-1.04	0.14	0.26	0.60
	Panel ADF-Statistics	-6.27	0.00*	-2.08	0.01**
	Group ρ-Statistics	4.51	1.00	1.71	0.95
	Group t-Statistics	-0.21	0.41	1.39	0.91
	Group ADF-Statistics	-9.36	0.00*	-16.57	0.00*
Kao	**Test Statistics**	-1.75	0.03**	-2.55	0.00*

Note: *, ** and *** indicates the presence of co-integration relationship at significance of 1 %, 5 % and 10 % level respectively.

4.3. The Estimation of Cointegration Coefficients

The study estimated cointegration coefficients in both Analysis 1 and Analysis 2 by using the Panel Dynamic Ordinary Least Squares (PDOLS) estimator and the results are presented in Table 4. Coefficient (R^2), intends to determine the explanatory power of the analysis. R^2 for Analysis 1 (0.90) shows that 90 % of total variation is explained by changes in the independent variable. Similarly 72 % of total variation is explained by changes in the independent variable in analysis 2.

Table 4: Cointegration Coefficients Estimation Results

	Coefficient	*t-statistics*	R^2	$\bar{R}^2$
Analysis1	-1.13	-5.90*	0.90	0.87
Analysis 2	-2.06	-5.57*	0.72	0.57

Note: *; indicates the presence of co-integration relationship at significance of 1%.

Table 4 shows the co-integration coefficients estimation results. It can be inferred from the estimation results that according to *Analysis 1 "one point increase above*

the average *economic growth rate, is associated with 1.13 % decrease in youth unemployment"* and according to *Analysis 2 "one point increase above the average economic growth rate, is associated with a 2.06 % decrease in youth unemployment"* in the above mentioned countries. It is suggested that while there is an ongoing high rate of young unemployment rate in these countries; economic growth alone is not enough in reducing youth unemployment.

5. Summary and Conclusions

This study attempts to investigate the relationship between youth unemployment rate and economic growth in the context of Okun law by using a new generation panel data analysis methods, cointegration tests, for 18 European countries whose youth unemployment rate are quite higher than the EU-28 (25 %) average. The Equation (3) is used for both Analysis 1 which employed data of 2006-2012 for 18 European countries; Analysis 2, which estimated data from 10 European countries for the period of 1996 to 2012.

According to the results of the study *"one point increase above* average *economic growth rate is associated with a 1.13 % decrease in youth unemployment in Analysis 1 and a 2.06 % decrease in youth unemployment in Analysis 2"* in these countries. The results of analysis concluded that an economic growth rate of above-average will reduce youth unemployment. Considering that there is high rate of young unemployment rate such as 50-60 % in these countries, the estimation results are too small to tackle the problem of youth unemployment just by economic growth. These countries should develop and implement different policy tools as necessary commissioning and regarding this issue.

It is suggested that regarding youth unemployment, governments are required to develop more effective and result-driven policies. But there is no one-size-fits all approach to tackling the crisis of youth employment. Therefore an in-depth understanding of both global and country-specific employment and labour market issues are prerequisites for improvements in youth labour market.

Hence it is suggested that new policy implications should be developed and put into effect by governments in order to cut down youth unemployment rate to a reasonable level. In this context, it is recommended that, the job training and learning skill developments, minimum wage increase in proportion to age of young employees and/or compulsory internship applications would be useful for students.

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Notes

Note 1. Former Yugoslavia Republic.

Note 2. Bosnia and Herzegovina, Greece*, Kosovo, Macedonia, Spain*, Serbia, Croatia, Montenegro, Portugal*, Italy*, Slovak Republic*, Ireland*, Latvia*, Bulgaria, Hungary*, Cyprus, Poland* and Lithuania*.