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Effects of economic growth, export and foreign direct investment inflows on unemployment in Turkey

Abstract

There have been significant increases in trade volume and foreign direct investment flows in the world in parallel with globalization since 1980s. This study examines the relationship between unemployment, economic growth, export and foreign direct investment inflows in Turkey during the period of 2000:Q1-2013:Q3 by using bound testing approach based on autoregressive distributed lag. We found that there was long run relationship among unemployment, economic growth, export and foreign direct investment inflows. Moreover empirical findings demonstrated that there was a negative relationship between unemployment and economic growth, export, while there was a positive relationship between unemployment and foreign direct investment inflows.

Keywords: unemployment, economic growth, export, foreign direct investment inflows.
JEL Classification: E24, F16, F21, F23.

Introduction

Turkey shifted from import substitution growth strategy to export led growth strategy in January 1980 when Turkey could not overcome economic problems during 1970s. In this context Turkey liberalized its economy and removed the constraints and barriers to free the movement of capital and goods gradually in the globalized world. There have been significant increases in trade volume and foreign direct investment (FDI) flows in the world due to increasing financial and trade openness, but however Turkey departed from this conjuncture in the world because of frequent financial and political crises during the period of 1980-2001. Consequently no significant increases in export and FDI inflows of Turkey experienced during this period. Turkey began to apply transition program to a strong economy for the recovery from 2001 crisis. Improvements in Turkish economy, privatizations, political stability, beginning of full membership negotiations with European Union (EU) led significant increases in economic growth, export and FDI inflows in Turkey during 2000s. Export volume reached to US$150 billion in 2012 from US$27 billion in 2000, while FDI inflows reached to US$22 billion in 2007 from US$982 million in 2000 (CBRT, 2013a and 2013b).

The objective of this study is to investigate the relationship between unemployment and economic growth, export and FDI inflows during the period of 2000-2013 by using bound testing approach based on autoregressive distributed lag (ARDL). The rest of the study is structured as follows. Section 1 reviews the empirical studies on the relationship between unemployment and economic growth, export and FDI inflows. Section 2 gives information about the data and econometric method and then presents empirical application and its main findings. The final section concludes the study.

1. Literature review

There have been extensive studies about the effects of economic growth, export and foreign direct investment on unemployment in the literature. These studies predominantly have been on the relationship between economic growth and unemployment. However there have been substantial increases in trade volume and FDI flows in the world especially as of 1980s after most of the countries removed constraints and barriers on the free movement of goods and capital and began to use incentives for attracting more FDI. Therefore empirical studies about the effects of export and FDI inflows on unemployment also have begun to be conducted. In this section we will firstly review empirical studies on the relationship between unemployment and economic growth and then review empirical studies on the relationship between unemployment and export, FDI inflows.

1.1. Unemployment and economic growth. Okun (1962) firstly pointed out the empirical relationship between unemployment and output and this relationship is called as Okun law in the literature. He examined the relationship between unemployment and real gross national product during the 1947:Q1-1960:Q4 in the US. He reached the following equation on the relationship between unemployment and real gross national product. This equation demonstrated that if there is zero growth of real output in a given quarter, the unemployment will increase 0.3% in that quarter and about 4% of economic growth is consistent with stable unemployment. On the other hand economic growth more than 4% generally decreases unemployment, while economic growth less than 4% generally increases unemployment.

$$\begin{aligned}&\textit{Change in unemployment rate} =\\&= 0.30 - 0.07 \times \textit{Growth of real output}.\end{aligned} \tag{1}$$

Some studies such as Ball et al. (2013) and Kitov (2011) found similar findings with Okun (1962), while some studies such as Attfield and Silverstone (1997), Sönger and Stiassny (2002), Lal et al. (2010) found that findings changed depending on data, estimation period and method. On the other hand, some studies such as Ismihan (2010) and Knotek (2007) found that there were structural breaks in the relationship between unemployment and output growth. In other words they found that the Okun coefficient in the expansion period of the economy is smaller than the one in the contraction period of the economy.

Ball et al. (2013) tested the validity of Okun law by using the data of the US as of 1948 and the data of 20 developed countries as of 1980. They found that Okun law was strong and stable relationship in most of the countries in the study. However they said that there were sometimes deviations from Okun law, but these deviations were generally small as size and short lived. Kitov (2011) investigated the relationship between unemployment and real GDP per capita in the developed countries (the US, France, Australia, the United Kingdom, Canada and Spain) during the period of 1985-2010. He found that Okun law predicted the changes in unemployment rate substantially correct for the developed countries.

Attfield and Silverstone (1997) calculated Okun coefficient 2.25 instead of 0.67 by using co-integration relationship with the same data set of Okun (1962). Sönger and Stiassny (2002) also determined that the Okun coefficient could vary from country to country. On the other hand, Ismihan (2010) decomposed coefficient of Okun law into the measurable and explainable components and found that Okun law tend to vary significantly over time in response to structural changes in legal, institutional and other relevant properties of labor and good markets. Lal et al. (2010) tested the validity of Okun law in some selected Asian countries (Bangladesh, China, India, Pakistan and Sri Lanka) during the 1980-2006 by using Engle Granger co-integration test and vector error correction model. They found that Okun law was not valid in these countries. Knotek (2007) examined the relationship between unemployment real GDP during the periods 1948-1960 and 1948-2007 in the US by using dynamic version of Okun law and found that changes existed in the Okun coefficient together with business cycles and the coefficient was generally smaller in the expansion periods of the economy than in the recessions.

The studies which have tested the validity of Okun law in Turkey demonstrated that the Okun relationship was generally asymmetric in Turkey and economic growth did not lead decreases in unemployment in the period after 2000. Kızılgöl (2006) examined the relationship between unemployment and economic growth in Turkey during the period of 1988-2006 by using co-integration and causality test and found that there was a long run relationship between unemployment and economic growth and unidirectional causality from unemployment rate to economic growth. Yüksel-Arabacı and Arabaci (2010) examined the relationship between unemployment and output in Turkey during the period of 1999-2009 by using Heaviside function and threshold regression and they found that there was a statistically significant asymmetry and output responded more to changes in unemployment in the contraction period of the economy than in the expansion period of the economy. Ceylan and Şahin (2010) investigated whether the Okun relationship was symmetrical or not in Turkey during the period of 1950-2007 by using threshold autoregressive (TAR) model and momentum TAR and they found that Okun law was asymmetric for Turkish economy, in other words the effect of real output on unemployment was different in expansion and contraction periods of the economy. In another study Tari and Abasiz (2010) examined the relationship between unemployment and economic growth in Turkey during the period of 1968-2007 by using two-regime threshold co-integration and threshold error correction models. They found that economic growth had more impact on unemployment in contraction period of the economy than expansion period of the economy.

Barışik et al. (2010) investigated the relationship between unemployment and economic growth in Turkey during the period of 1988-2008 by using Markov-switching approach and they found that economic growth did not generate employment. Demirgil (2010) tested the validity of Okunlas in Turkey during the period of 1987-2007 by using regression analysis and found that the slope coefficient and constant were different from Okun (1962) and there was a asymmetric relationship between unemployment and economic growth in Turkey. Umut (2011) examined the relationship between unemployment and economic growth in Turkey during the period of 2001-2008 by using Granger causality and found that there was no causality between unemployment and economic growth.

1.2. Unemployment, export and foreign direct investment inflows. There have been relatively limited studies on the relationship between unemployment and export, FDI inflows in the literature. Major studies on the relationship between unemployment and export, FDI inflows were presented in Table 1. The studies have reached different findings about the relationship between unemployment and export, FDI inflows depending on different countries/country groups. The studies such as Göçer et al. (2013), Habib and Sarwar (2013), Ozughalu and Ogwumike (2013), Balcerzak and Żurek (2011), Chang (2007), Craigwell (2006) found that there was a negative relationship between unemployment and FDI inflows, while the studies such as Hisarcıklar et al. (2013), and Ciftcioglu et al. (2007) found that there was a positive relationship between unemployment and FDI inflows. Moreover the studies such as Mehra (2013), Rizvi and Nishat (2009), Aktar and Ozturk (2009) found that FDI inflows had no impact on unemployment.

On the other hand, there have been very few studies on the relationship between unemployment and export. Göçer et al. (2013) and Doğan (2012) found that there was a negative relationship between unemployment and export, while Ozughalu and Ogwumike (2013) and Aktar and Ozturk (2009) found that export had no impact on unemployment.

Table 1. Literature review

Study	Country/Country group (study period)	Method	Major findings
Göçer et al. (2013)	Turkey (2000-2011)	Bound testing approach	They found that export and FDI inflows had a negative long run impact on the unemployment.
Mehra (2013)	India (1970-2007)	Multiple regression	She found that FDI inflows had a negligible impact on employment.
Habib and Sarwar (2013)	Pakistan (1970-2011)	Johansen co-integration test and Granger causality test	They found that GDP per capita and FDI inflows had a negative impact on unemployment.
Mucuk and Demirsel (2013)	Argentina, Colombia, Philippines, Chile, Turkey, Thailand and Uruguay (1981-2009)	Panel data analysis	They found that there was a long run relationship between unemployment and FDI inflows, but FDI inflows had negative impact on unemployment in Thailand, while FDI inflows had positive impact on unemployment in Turkey and Argentina. However there was unidirectional causality from FDI inflows to unemployment.
Ozughalu and Ogwumike (2013)	Nigeria (1984-2010)	Johansen co-integration test and Granger causality test	They found that there was a long run relationship between unemployment and real GDP, real FDI and real export, but real GDP, real FDI and real export did not decrease the unemployment.
Doğan (2012)	Turkey (2000-2010)	VAR model	He found that positive shocks in the economic growth and increases in export and inflation decreased the unemployment.
Yayli and Değer (2012)	27 developing countries (1991-2008)	Panel data analysis	They found that there was unidirectional causality from FDI to employment in the short run
Balcerzak and Żurek (2011)	Poland (1995-2009)	VAR model	They found that FDI had negative impact on unemployment in the short run.
Pinn et al. (2011)	Malaysia (1970-2007)	ARDL and ECM-ARDL approach	They found there was unidirectional causality from FDI to employment.
Rizvi and Nishat (2009)	China, India and Pakistan (1985-2008)	Panel co-integration	They found that there was a long run relationship between employment and FDI, GDP and only GDP had significant impact on employment in all countries. Moreover FDI had no impact on employment generation in China, India and Pakistan.
Aktar and Ozturk (2009)	Turkey (2000-2007)	VAR model	They found that there was a long run relationship between unemployment and GDP, export, FDI and moreover economic growth, FDI and export generally did not decrease unemployment.
Ciftcioglu et al. (2007)	9 Central and Eastern Europe countries (1995-2003)	Panel data analysis	They found that increases in net FDI inflows had negative impact on unemployment.
Chang (2007)	Taiwan (1981-2003)	Co-integration and causality test, impulse-response and variance decomposition analysis	He found that shocks in economic growth and FDI inflows had negative impact on unemployment rate.
Craigwell (2006)	20 Caribbean countries (1990-2000)	Granger causality test	He found that FDI had positive impact on employment.

2. Data, method, empirical application and main findings

We will investigate the relationship between unemployment and economic growth, export, FDI inflows in this study. Firstly we will analyze the long run relationship among the variables by ARDL bound testing approach and examine whether short run imbalance is adjusted in the long run by estimating error correction model.

2.1. Data. We used the quarterly data of unemploy-ment, economic growth, export and FDI inflows from 2000:Q1 to 2013:Q3. The unemploy-ment rate and economic growth (real GDP growth) for Turkey were taken from the database of Turkish Statistical Institute, while real export and FDI inflows were taken from the electronic data delivery system of the Central Bank of the Republic of Turkey (CBRT). FDI inflows were converted to the real values by using GDP deflator. We used the growth rates of all the variables in the econometric analysis. The variables and their symbols in the study were presented in Table 2. Eviews 7.1 software package was used in the econometric analysis.

Table 2. Variables used in the econometric analysis

Variable symbols	Variables
UNEMP	Unemployment rate (%)
RGDP	Growth rate of real GDP (%)
REXP	Growth rate of real export (%)
RFDI	Growth rate of real FDI inflows (%)

2.2. Method. We investigated the relationship between unemployment and economic growth, export, FDI inflows by time series analysis. Spurious regression may be emerged if the time series are not stationary (Gujarati, 2003, p. 792). Therefore stationarity of the variables firstly should be checked in the analysis of time series. We tested the stationarity of time series by Augmented Dickey-Fuller (ADF) (1981), Phillips-Perron (PP) (1988) and Kwiatkowski, Phillips, Schmidt and Shin (KPSS) (1992) tests and then examined the long run and short-run relationships among the variables by ARDL bound testing approach and Vector Error Correction Model (VECM).

Co-integration means that there is a stationary combination of two time series which are not stationary at their levels. Engle-Granger (1987), Johansen (1988) and Johansen and Juselius (1990) tests are generally used for the co-integration test in the literature. Time series are required to be stationary at the same level in order to apply these co-integration tests. ARDL bound testing approach, which were developed by Pesaran and Shin (1995) and Pesaran et al. (2001), enables to apply co-integration tests to the time series which have different integration levels. However VECM can be obtained by a simple linear transformation simultaneously in this approach. Also it is possible that there is no co-integration relationship if all data are $I(1)$ when there is limited number of data in the analysis of time series. So ARDL bound testing approach become prominent. But since the critical values of Pesaran et al. (2001) were determined by considering that the variables were $I(0)$ or $I(1)$, variables should be tested in the event that the variables were $I(2)$. ARDL bounding test approach has better statistical properties than Engle-Granger co-integration test does, because the unconstrained error correction model was used in ARDL bound testing approach and ARDL bounding test approach also provides more reliable results in small samples than Engle-Granger and Johansen co-integration tests do.

Bound test model (equation (2)) below with three independent variables based on the estimation of unconstrained error correction models by least-square method. Equation (2) includes lags difference of dependent and independent variables and one lag of independent variables. Each lag difference of dependent and independent variables point out short run dynamics and show the possible changes in the dependent variable, while ratio of each lag value coefficient to the coefficient of dependent variable shows the long run dynamics.

$$\Delta \ln UNEMP_t = \beta_0 + \sum_{i=1}^{m} \beta_{1i} \Delta \ln UNEMP_{t-i} + \sum_{i=0}^{m} \beta_{2i} \Delta \ln REXP_{t-i} + \sum_{i=0}^{m} \beta_{3i} \Delta \ln RFDI_{t-i} + \\ + \sum_{i=0}^{m} \beta_{4i} \Delta \ln RGDP_{t-i} + \theta_1 \ln UNEMP_{t-1} + \theta_2 \ln REXP_{t-1} + \theta_3 \ln RFDI_{t-1} + \theta_4 \ln RGDP_{t-1}. \quad (2)$$

Co-integration relationship is conducted by testing null hypothesis H_0: $\theta_1 = \theta_2 = \theta_3 = \theta_4 = 0$ against alternative hypothesis H_A: $\theta_1 \neq \theta_2 \neq \theta_3 \neq \theta_4 \neq 0$. Pesaran et al. (2001) gave critical values in their studies because the critical values of bound test are not consistent with standard F distribution. If F statistic is above upper critical value, there is co-integration relationship among the time series. On the other hand, if F statistic is below the lower critical value, there is no co-integration relationship among the variables. Finally if F statistic is between upper and lower critical values, alternative co-integration tests such as Engle and Granger (1987), Johansen (1988) and Johansen and Juselius (1990) which consider the integration levels of time series should be used.

m (lag length) in equation (2) should firstly be determined while applying bound test. Information criteria are used in the determination of optimal lag lengths. We used Akaike Information Criterion (AIC) and Schwartz Criterion (SC) in determination of optimal lag lengths. Since there is autocorrelation in case of lags, there should be no autocorrelation among the error term series for the bound test to provide accurate results.

2.3. Empirical application and findings. *2.3.1. Unit root analysis.* We conducted the stationarity analysis of the time series by ADF, PP and KPSS unit root tests and the results of unit root tests were presented in Table 3. We found that *REXP*, *RFDI* and *RGDP* were $I(0)$, while *UNEMP* was $I(0)$.

Table 3. Results of unit root tests

	ADF test statistic		PP test statistic		KPSS LM test statistic	
	Level	First difference	Level	First difference	Level	First difference
ln*UNEMP*	-3.886*	-	4.002*	-	0.886*	-
ln*REXP*	-2.113	-6.443*	-0.889	-5.275*	1.905	0.664*

Table 3 (cont.). Results of unit root tests

	ADF test statistic		PP test statistic		KPSS LM test statistic	
	Level	First difference	Level	First difference	Level	First difference
ln*RFDI*	-1.674	-5.397*	-1.221	-6.771*	1.702	0.821*
ln*RGDP*	-1.431	-4.982*	-1.673	-5.509*	1.439	0.649*

Notes: *Stationary level. **Lag lengths were obtained by automatic lag selection mechanism in Eviews 7.1.

2.3.2. ARDL bound test. The variables had different integration levels as consequence of unit root tests. Therefore we applied *F* test to equation (1) to investigate the long-run relationship among the variables. The results of ARDL bound test and their critical values were presented in Table 4. The results demonstrated that there was a long-run relationship among the variables.

Table 4. Results of co-integration test

Independent variable	Function		Diagnostic test results			
		F-stat.	χ^2_{NORMAL}	χ^2_{ARCH}	χ^2_{RESET}	χ^2_{SERIAL}
ln*UNEMP*	*F*(ln*UNEMP*|ln*REXP*,ln*RFDI*,ln*RGDP*)	8.651	0.482	[1]:1.209	[1]:0.632	[2]:1.356
Asymptotic critical values						
	1%		5%		10%	
	I(0)	*I*(1)	*I*(0)	*I*(1)	*I*(0)	*I*(1)
Narayan (2005)	3.870	4.889	2.893	4.442	2.592	3.553

Note: Critical values were taken from Case 3 table in according to Narayan (2005), *k* (number of independent variables) = 3 and number of observations = 55.

AIC and SC criteria were used in the determination of optimum lag length of ARDL model and the estimation was made by taking maximum lag length as 8. ARDL (1, 1, 2, 2) model was selected as a common consequence of both criterion. The long run coefficients of ARDL (1, 1, 2, 2) were presented in Table 5. The coefficients of the variables were found to be statistically significant as seen from Table 5. The results demonstrated that there was a long run relationship among the variables and export and economic growth had negative impact on unemployment, while FDI inflows had positive impact on unemployment. In other words increases in economic growth and export decreased the unemployment, while increases in FDI inflows increased the unemployment. Also empirical findings demonstrated that 100% increase in economic growth and export respectively led a 22.5% and 21.5% decrease in the unemployment, while 100% increase in FDI inflows caused a 46% increase in unemployment according to our model.

Table 5. Long-run coefficients of ARDL (1, 1, 2, 2) model

Variables	Coefficient	Std. error	*t*-stat.	*p*-value
Dependent variable: ln*UNEMP*				
ln*UNEMP*(-1)	0.8397	0.0512	16.390	0.000
ln*REXP*	-0.0750	0.0302	-2.4821	0.012
Ln*REXP*(-1)	-0.6746	0.0863	-7.8150	0.000
ln*RFDI*	0.4814	0.1090	4.4151	0.000
Ln*RFDI*(-1)	0.3845	0.1117	3.4424	0.010
ln*RFDI*(-2)	0.2255	0.0899	2.5089	0.011
ln*RGDP*	-0.0028	0.0010	-2.6807	0.002
Ln*RGDP*(-1)	-0.0028	0.0010	-2.6807	0.021
ln*RGDP*(-2)	-0.0630	0.1454	-0.4335	0.213
Constant	-0.1602	0.0512	-3.1282	0.001
Long run coefficients				
Variable	Coefficient	Std. error	*t*-stat.	
ln*UNEMP*	0.8763	0.2580	3.3958	
ln*REXP*	-0.2159	0.0504	-4.2796	
ln*RFDI*	0.4632	0.2513	1.8426	
ln*RGDP*	-0.2255	0.0899	-2.5089	
Constant	-1.0174	0.2570	-3.9577	
Long run diagnostic test results				
	F-test stat.		*p*-value	
χ^2_{SERIAL}	1.566		0.318	
χ^2_{RAMSEY}	1.322		0.283	
χ^2_{NORMAL}	1.134		0.197	
χ^2_{WHITE}	2.003		0.091	
χ^2_{ARCH}	1.992		0.176	

Notes: R^2 = 0.901; adjusted R^2 = 0.897; Durbin Watson = 2.11; *F*-stat. = 45.887 (0.000).

The empirical studies which have investigated the relationship between unemployment and economic growth in Turkey predominantly have tested the validity of Okun law and they found that the relationship between unemployment and economic growth has not been consistent with Okun law and it generally showed an asymmetric behavior. But we analyzed the long-run relationship between unemployment and economic growth in this study. Our empirical findings were consistent with Ceylan and Şahin (2010) and Kızılgöl (2006). In other words we found that there was negative long-run relationship between unemployment and economic growth. Also our study found that there was a negative long run relationship between unemployment and export in a similar way to Göçer et al. (2013). On the other hand, we found that there was a positive long-run relationship between unemployment and FDI inflows same as Mucuk and Demirsel (2013).

Moreover we used cumulative sum (CUSUM) test of structural break for the long-run relationship equation and we found that there were no structural breaks as seen in Figure 1.

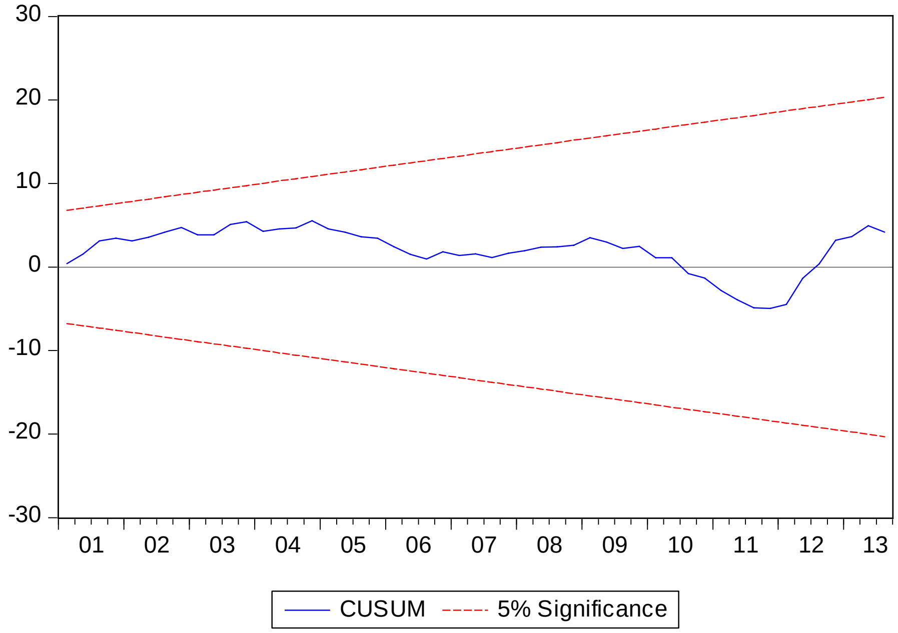

Fig. 1. Structural break test of long-run relationship equation

2.3.3. Error correction model. The short-run relationship among the variables in our study was analyzed by ARDL error correction model. The short-run coefficients of ARDL (1, 1, 2, 2) model were presented in Table 6. The empirical findings demonstrated that there was short-run relationship among the variables in the short run. The statistically significant negative coefficient of ECT(-1) verified the long run relationship. Moreover error correction term measures how quickly the endogenous variable adjusts to the changes in the independent variables before the endogenous variable converges to the equilibrium level. Negative and statistically significant error correction term demonstrates that adjustment process is effective in restoring equilibrium. Negative but low error correction term in absolute value points out a slow adjustment. ECT term of our model was found to be statistically significant and -0.6635. This finding demonstrated that 66% of a deviation t_{-1} period will be adjusted in t period. So our independent variables did not have a significant impact in the short run.

Table 6. Short-run coefficients of ARDL (1, 1, 2, 2) model

Variables	Coefficient	Std. error	*t*-stat.	*p*-value
Independent Variable: Δln*UNEMP*				
Δln*UNEMP*(-1)	0.4977	0.0641	7.7624	0.0000
Δln*REXP*	-0.8186	0.1835	-4.4594	0.0000
Δln*REXP*(-1)	-0.2174	0.0671	-3.2382	0.0017
Δln*RFDI*	0.1320	0.0392	3.3648	0.0011
Δln*RFDI*(-1)	0.0625	0.0035	17.7601	0.0000
Δln*DDY*(-2)	0.0434	0.0052	8.2230	0.0000
Δln*RGDP*	-0.0663	0.0162	-4.0844	0.0001
Δln*RGDP*(-1)	-0.0512	0.0129	-3.9624	0.0001
Δln*RGDP*(-2)	-3.8059	1.8582	-2.0481	0.0421
ECT(-1)	-0.6635	0.2393	-2.7722	0.0012
Constant	-0.9542	0.2640	-3.6148	0.0000
Short-run coefficients				
	Coefficient	Std. error	*t*-stat.	
ln*UNEMP*	0.7189	0.2414	2.9772	
ln*REXP*	-0.4977	0.1301	-3.8250	
ln*RFDI*	0.8186	0.1417	5.7739	
ln*RGDP*	-0.1458	0.0303	-4.8100	
Constant	-0.1213	0.0562	-2.1565	
Short-run diagnostic test results				
	F-test stat.		*p*-value	
χ^2_{SERIAL}	1.342		0.153	
χ^2_{RAMSEY}	1.831		0.129	
χ^2_{NORMAL}	0.808		0.280	
χ^2_{WHITE}	1.569		0.161	
χ^2_{ARCH}	0.885		0.082	

Notes: R^2 = 0.587; adjusted R^2 = 0.551; Durbin Watson = 2.135; *F*-stat. = 7.446.

Moreover we also used cumulative sum (CUSUM) test of structural break for the short-run relationship equation and we found that there were no structural breaks as seen in Figure 2.

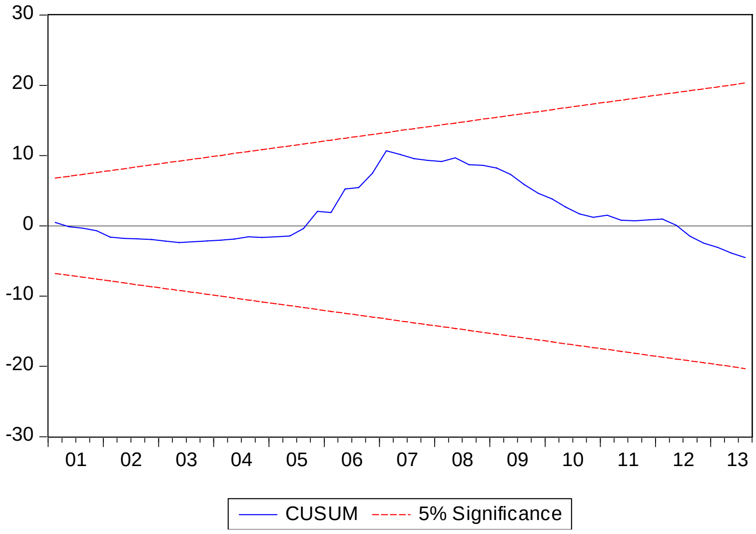

Fig. 2. Structural break test of short-run relationship equation

Conclusion

Turkey shifted to free market economy gradually as of 1980 and removed the constraints and barriers on free movement of capital and goods. FDI inflows and export volume in Turkey remained low levels during the period of 1980-2001 due to frequent financial crises and political instability. However improvement in Turkish economy with transition program to a strong economy for the recovery from 2001 crisis, political stability, beginning of full membership negotiations with EU caused Turkey to experience substantial increases in economic growth, export and FDI inflows as of 2001. This study investigated the relationship among unemployment, economic growth, export, and FDI inflows in Turkey during the period of 2000:Q1-2013:Q3 by using ARDL bound testing approach.

The results of co-integration test demonstrated that there was a long-run relationship among the variables and also increases in economic growth and export decreased the unemployment, while increases in FDI inflows increased the unemployment in the long run. Most of the studies have found that economic growth and export had a negative impact on unemployment. So our finding on the relationship between unemployment and economic growth, export is consistent with the general trend in the literature. On the other hand, the effects of FDI on unemployment generally have changed depending on that the FDI inflows are green field investment or brown field investment. FDI inflows into Turkey have been generally in form of privatization and acquisitions in other words brown field investments. Therefore FDI inflows have not generated employment in Turkey. Turkey should implement policies to attract green field investments to generate new employment.

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