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The Effects of Foreign Direct Investments and Economic Growth on Employment and Female Employment: A Time Series Analysis With Structural Breaks For Turkey

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Abstract
Purpose - *The purpose of this paper is to examine the effects of foreign direct investments and economic growth on employment and female employment in Turkey with quarterly data for 2000:Q1-2013:Q4 terms.*
Design/ Methodology/Approach *- The data were obtained from Electronic Data Delivery System (EDDS) of the Central Bank of the Republic of Turkey (CBRT), Turkish Statistical Institute (TURKSTAT) and International Financial Statistics (IFS). The stationarity of variables are analysed with Carrion-i Silvestre et. al. (2009) unit root test with multiple structural breaks and the cointegration relationship between variables is tested with Maki (2012) cointegration test with multiple structural breaks. Dynamic ordinary least squares (DOLS) method is used for estimating cointegration coefficients.*
Findings *– It is revealed with the study that foreign direct investments affect employment and female employment negatively whereas economic growth affect employment and female employment positively.*
Orginality/ value - *Despite various studies exploring the relationship between FDI and employment, studies examining the relationship between FDI and female employment are absent in the literature. From this point of view, this study can be seen as the precursor for enlightening the gender dimension of the subject.*
Key Words: Employment, Female Employment, Foreign Direct Investment, Economic Growth, Unit Root and Cointegration Tests with Multiple Structural Breaks.
JEL Classification: C32, E24, F21, F40.

1. Introduction

Foreign direct investments (FDI) are key determinants for economic integration in the global world. As is known, the aim of investor country is to find the most appropriate region for cost-efficient production while host countries look for higher income flows, growth rates and higher employment levels in the globalization process, Developing countries are the main applicants of FDI owing to their beneficial effects. FDI are generally seen as the incentives of economic growth and technological progress, moreover, a significant financial source for reducing current accounts deficit.

Turkey, as a developing nation has attracted high levels of FDI inflows under favour of her geo-political location since 2000's and raised the growth rates in line with this acceleration. However, growth does not always conduce to employment and unemployment is the foremost problem of Turkey from past to present. Turkish economy is weak in generating jobs, furthermore, especially female employment levels in the country are considerably low in comparison with OECD and European countries. Gender and location are the substantial determinants of employment in Turkey. Unemployment rates are higher in urban owing to the limited employment opportunuties in manufacture and service sectors and lower in rural due to the employment creation effects of agriculture. Females are excluded from the labor market on a large scale as their employment rates are one-third of male's in the country.

The aim of is this paper is to examine the effects of foreign direct investments and economic growth on employment and female employment over the 2000-2013 period in Turkey. In this scope, quarterly data for 2000:Q1-2013:Q4 terms are used. The stationarity of variables are analysed with Carrion-i Silvestre et.al. (2009) unit root test and the cointegration relation between the variables is tested with Maki (2012) cointegration test with multiple structural breaks. It is thought that the study will both reveal the linkage between FDI and employment and uncover the link of economic growth and employment concerning the country. Although there are various studies exploring the relationship between FDI and employment, studies examining the relationship between FDI and female employment are absent in the literature. When viewed from this aspect, this study can be seen as the precursor for enlightening the gender dimension of the subject. In this framework, the study begins with the related literature reviews. The model and the data set will be presented in the next section. The econometric method and emprical findings will be determined in the following section. And the paper will be ended up with the conclusion section consisting the results.

2. Literature review

There are various studies investigating the effects of foreign direct investment in the world and Turkey. In much of these studies, it is revealed that FDI has a positive impact on employment. However, according to studies based on Turkey, many findings show that foreign direct

investments have no significant impact on employment creation. Fu and Balasubramanyam (2005) analyzed the relationship between employmentand foreign direct investment in China over the priod 1987 and 1998 by using GMM method and reached that a 1% increase in FDI leads to 0,03% increase in employment. Hunya and Geishecker (2005) studied on the employment effects of foreign direct investment in Central and Eastern Europe during the period 1993-2003 applying Gravity model and suggested that FDI has higher impact on skilled labour concerning employment. Craigwell (2006) studied the relationship between employmentand foreign direct investment in 20 English and Dutch speaking countries by panel data analysis during the period 1990 to 2000. He revealed that an increase in FDI in the entire sample of Caribbean countries leads to an approximate one to one increase in employment. Jayaraman and Singh (2007) analysed the relationship between foreign direct investment and employment creation in Fiji, covering a 34-year period (1970-2003) by using autoregressive distributed lag model (ARDL) and found unidirectional long run causality running from foreign direct investment to employment and a unidirectional causality from foreign direct investment to GDP in the short run (Jayaraman and Singh, 2007: 2). Ajega and Nunnekamp (2008) investigated the long-run relationship between inward FDI and economic outcomes in terms of value added and employment at the level of US states over the period 1977-2001 by using co-integration technique and Granger causality tests and found co-integration as well as two directional causality between FDI and outcome variables.

Hisarcıklılar et al.(2009) tried to explain the role of FDI inflows in job creation in Turkey between 2000 and 2007. They used dynamical panel data analysis and found a negative relationship between FDI inflows and employment. Aktar and Öztürk (2009) stated that foreign direct investment has no impact on increasing employment over the period 2001-2007 in Turkey in their study. Ekinci (2011) suggested a long term relation between foreign direct investment and economic growth between 1980-2010 by using Granger causality test in Turkey in his study. However, he found no relation between foreign direct investment and employment. Saray (2011) analyzed the relationship between employmentand foreign direct investment in Turkey covering 1970 and 2009 period by using autoregressive distributed lag model (ARDL)and revealed that FDI has no impact on reducing unemployment in the country. Vergil and Ayaş (2013) revealed that foreign direct investments had negative impact on employment across four sectors over the 1996-2002 period in Turkey. Additionally, they stated that the most negative impact has been realized on manufacture sector. Bakkalcı and Argın (2013) examined the relationship between FDI, growth, productivity, employment and wages between 1991 and 2011 in Turkey and determined that inward FDI has a positive impact on employment and firm performances. Göçer and Peker (2014) analyzed the effects of foreign direct investment on employment for Turkey, China and India by using 1980-2011 period data. They revealed that, 10%increase of foreign direct investment leads to a decrease on the employment in Turkey by 0,3% while decreases in China and India respectively by 0,3% and 0,2%.

Studies examining linkages between growth and employment presents changeable relations between the two facts. For instance, Krongkaew et. al. (2006) assert a positive linkage between economic growth andemployment in Thailand. They emphasize that the periods of economic growth (1992-1996 and 2000-2002) boosted labour demand substantially in the sectors where the poor are the dominant group. As a result, wages and salaries of bottom group increased and these events were significant in reducing poverty in the country. Islam (2004) determines that there is no invariant relationship between growth and employment for the experience of selected countries. For instance Indonesia's1970's and 1980's, Uganda's and Vietnam's experience in 1990's can be considered to be the case of "good growth" leading to high rates of employment. On the other hand Ethiopia and Bolivia's economic growth during the 1990's were not accompanied by expansion in employment. Meeskoub (2008) reveals that Middle East and North Africa (MENA) region has low growth elasticities of employment (weak relationship between growth and employment) as the majority of the poor are working in rural areas and in low productivity activities. Thus an employment policy putting the emphasis on strenghening the growth-employment nexus by promoting job creation and improving the access of the poor to such jobs is needed.

On the other hand, while there is no study examining the effects of FDI and/or economic growth on female employment, some studiesin the literature investigated the relationship between development and female labour force participation. In this framework, most of them suggest a U shaped relationship between development and female labour force participation. According to them, labour force participation rate (LFPR) first decline then rises as countries develop. For instance, Goldin (1994) confirms the U shaped relationship between development and female labour force participation in more than one hundred countries and in United States. Lechman (2014) supports the hypothesis on U-shaped relationship between female labour force participation and economic growth by using longitudinal data analysis concerning 162 countries over the period 1990-2012. Chapman (2015) approves the U-shaped relationship between development and female labour force participation in Middle East and North Africa, using a panel data set of 20 countries in the region for the period of 1990-2012. Mujahid et al. (2013) determines the long run and U shaped association between economic development and LFPR using ARDL technique for Pakistan's economy over the period of 1980-2010. However, Lahoti and Swaminathan (2013) suggests that there is no U shaped relationship between level of domestic products and women's female labour force participation rate (LFPR) by using state level data spanning 1983-84 to 2011-12 in India. They assert that growth by itself is not sufficient to increase women's economic activity.

3. The Model and Data Set

In the study, the effects of FDI and economic growth on employment and female employment is analysed with Carrion-i-Silvestre et.al. (2009) unit root tests with multiple structural breaks, Maki (2012)

cointegration tests with multiple structural breaks and dynamic ordinary least squares (DOLS). The quarterly data of FDI inflows, economic growth, employment and female employment from 2000:Q1-2013:Q4 are used in the study. The starting date of monthly data is 2005, quarterly data is 2000 and annual data is 1988 concerning the employment in Turkey. As the annual data has observation shortage and monthly data misses the experienced crisis in Turkey, the analysis period is selected as the quarterly 2000-2013 period. The analysis is based upon two different models:

$$\ln empsa_t = \alpha_0 + \alpha_1 \ln fdisa_t + \alpha_2 \ln rgdpsa + u_t \quad (1)$$

$$\ln wempsa_t = \alpha_0 + \alpha_1 \ln fdisa_t + \alpha_2 \ln rgdpsa + u_t \quad (2)$$

Emp and *wmp* represents employment and female employment respectively, *fdi* states foreign direct investment inflows and *rgdp*states real GDP as the indicator of the economic growth. Data of foreign direct investment acquired in US$ is obtained in terms of national monetary unit TL by multiplying with nominal US$/TL exchange rate. Real GDP and FDI data used in the analysis is obtained from Electronic Data Delivery System (EDDS) of the Central Bank of the Republic of Turkey (CBRT). Employment and female employment data is obtained from Turkish Statistical Institute (TUIK) and nominal US$/TL exchange rate data is acquired from International Financial Statistics (IFS). As all variables show seasonal fluctuations, these fluctuations are purified by Tramo/Seats method. Purified variables are attached "sa" attachment. Natural logarithms of series are taken to transform the series from exponantial increases to arithmetical increases.

4. Econometric Method and Emprical Findings

4.1. Unit Root Test with Multiple Structural Breaks

Granger and Newbold (1974) determines that supurious regression models might occur in case of high R^2 and significant t-values if the time series are not stationary, therefore, the stationarity of the variables should be checked. In this framework, Augmented Dickey-Fuller (ADF) (1981) and Phillips-Perron (PP) (1988) are the unit root tests which are used mainly in the literature. Furthermore, Dickey-Fuller (DF-GLS (ERS) (1996) and Ng- Perron (2001) unit root tests also check the stationarity of series.

Existence of structural breaks reduces the reliability of the results of related unit root tests in studies using time series. Hence, Perron (1989) developed one structural break unit root test in which the time of structural break is determined exogenous. Perron (1989) unit root test requires a true determination of break time. In case of a false determination of break time, the time series will seem unstationary although they are stationary actually. For this reason, Zivot-Andrews (1992) (ZA), Perron (1997), Lumsdaine-Papell (1997) (LP), Lee-Strazicich (LS) (2003), LS (2004) and Carrion-i-Silvestre et.al. (2009) structural breaks unit root tests are used in which the time of structural break is determined endogenously. Among this tests, ZA ve LS (2004) tests allow one, LP and LS (2003) tests allow two, Carrion-i-Silvestre (CS) (2009) multiple structural break tests allow five structural breaks in the series. Bai and Perron (2003) algorithm is used in the determination of break time in CS test. Furthermore, CS test is determined by the help of quasi-GLS (generalized least squares) method, dynamic programming and the sum of error squares. The stochastic data production process of CS test is given below:

$$y_t = d_t + u_t \quad (2)$$

$$u_t = \alpha u_{t-1} + v_t,\ t = 0,...,T \quad (3)$$

Carrion-i, Silvestre et. al. (2009) have developed five test statistics for testing the stationarity for multiple structural breaks of time series in this process. These are feasible point optimal test; P_T suggested by Perron ve Rodriguez (2003), modified feasible point optimal test; MP_T developed by following Ng ve Perron (2001), M-class test statistics and test statistics allowing multiple structural breaks which are suggested by Ng ve Perron (2001) and Perron ve Rodriguez (2003). The hypothesis of the test are:

H_0 = There is unit root under structural breaks.

H_1 = There is no unit root under structural breaks.

When the calculated test statistics are lower than the critical value, H_0 is rejected. In other words, it is accepted that the analysed series are stationary. The stationarity of time series in this study is analysed with the CS multiple structural unit root test due to the presence of endogenous and exogenous shocks like 2000-2001 banking crisis, 2008 global crisis and financial shocks in the investigation period. The results of CS multiple structural unit root test are given in Appendix 1.

CS unit root test results show that the series are not stationary at level values as the test statistics calculated in level values are higher than critical values. And CS unit root test results also express that the series are stationary [I(1)] when their first difference are calculated. Considering this fact, long-term relationship between the series will be tested with co-integration analysis.

4.2. Cointegration Analysis

The presence of the long-term relationship between the variables are determined by the Engle-Granger cointegration test (developed by Engle and Granger) and Johansen cointegration test (developed by Johansen (1988) and Johansen & Juselius (1990)) which do not take the structural breaks into consideration. Gregory and Hansen (1996) stated that Engle-Granger and Johansen cointegration tests may give false results in investigating long-term relationship between the series in case of the presence of structural breaks. Hence, Gregory and Hansen (1996) developed a cointegration test allowing one structural break, moreover, in which the time of structural break is determined internally. Afterwards Hatemi-J (2008) has expanded the Gregory-Hansen cointegration test with a cointegration test allowing two structural breaks and also in which the time of structural break is determined internally. On the other side, Maki (2012) developed a cointegration test allowing five structural breaks, in which the time of structural break is determined internally in case of the existence of structural breaks. In this scope, the cointegration test of Maki is superior than Hatemi-J cointegration test. Maki (2012)

built four different models for testing cointegration relationship between series in presence of structural breaks. The models are given below:

Model 0: $$y_t = \alpha + \sum_{i=1}^{k} \alpha_i D_{i,t} + \beta x_t + e_t \quad (8)$$

Model 1: $$y_t = \alpha + \sum_{i=1}^{k} \alpha_i D_{i,t} + \beta x_t + \sum_{i=1}^{k} \beta_i x_t D_{i,t} + e_t \quad (9)$$

Model 2: $$y_t = \alpha + \sum_{i=1}^{k} \alpha_i D_{i,t} + \gamma t + \beta x_t + \sum_{i=1}^{k} \beta_i x_t D_{i,t} + e_t \quad (10)$$

Model 3: $$y_t = \alpha + \sum_{i=1}^{k} \alpha_i D_{i,t} + \gamma t + \sum_{i=1}^{k} \gamma_i D_{i,t} + \beta x_t + \sum_{i=1}^{k} \beta_i x_t D_{i,t} + e_t \quad (11)$$

Model 0 states a model without trend where there is a refracture in the constant term, Model 1 expresses a model without trend where there is a refracture in constant term and grade, Model 2 states a model a model with trend where there is a refracture in constant term and grade and Model 3 refers a model where there is a refracture in constant term, in the grade and in the trend.

Additionally, $D_{i,t}\ (i = 1, \ldots, k)$ states dummy variable and T_{Bi} shows the time of structural break.

The hypothesis of the test are:

H_0=There is no cointegration under structural breaks.

H_1= There is cointegration under structural breaks.

The critical values for testing the hypothesis are reproduced with Monte Carlo simulations. Accordingly, when the Maki cointegration test statistics is lower than critical value, H_0 hypothesis is rejected. In this study, Maki (2012) cointegration test with multiple structural breaks is used in analysing the long-term relationship between the variables. The results obtained for Model 1 and Model 2 are given in Appendix 2 and Appendix 3 respectively.

When Appendix 2 and Appendix 3 are analysed, it is revealed that test statistics in Model 0 and Model 2 at 1% significance level and test statistics in Model 3 at 5% significance level are lower than critical values. Test results indicate that the H_0 hypothesis is rejected as it shows there is no cointegration between employment&female employment and FDI & economic growth and variables are acting together in the long-run. In case of the examination of structural breaks, it is seen obviously that the test method is successful at predicting the 2000-2001 crisis in Turkey and the global 2008 crisis.

4.3. Estimation of Long-Term Cointegration Coefficients

Long-term cointegration coefficients can be estimated with dynamic ordinary least squares (DOLS) method developed by Stock and Watson. This method can be used in small samplings. Stock and Watson included the lags and leads of level values and differences in the method to solve the problem of endogeneity and autocorrelation between independent variables (Esteve and Requane, 2006. 118). Moreover, Stock and Watson stated that [I(0), I(1) and I(2)] χ^2 distributed DOLS and dynamic generalized least squares estimator can be applied if the variables are cointegrated at different levels (Stock ve Watson, 2003, 800-801). Regression with two variables which is composed durig the estimation with DOLS method is given below.

$$Y_t = B' X_t + \sum_{i=-m}^{m} \delta_i \Delta X_{t-i} + \sum_{i=-n}^{n} \varphi \Delta Trend_{t-i} + \varepsilon_t \quad (12)$$

In the equation 12, $B' = (c, \alpha, \beta)$ refers coefficient matrix, $X_t = (1, X, Trend)$ refers explanatory variable matrix, (-m and –n) states the length lags and (m ve n) states the length of leads.

The long- term cointegration coefficients are estimated with DOLS method in this study. Besides, structural break dates obtained from Maki cointegration test are included in the analysis as dummy variable. The estimation results for Model 1 and Model 2 is stated in Appendix 4 and Appendix 5.

According to the results in Appendix 4, it is observed that, the coefficients of variables are significant, moreover, 1% increase in foreign direct investments reduces the employment at the rate of 0,09% and 1% increase in economic growth raises the employment at the rate of 0,2%. When the dummy variables are analysed, it is distinguished that d3, d4 and d5 variables are significant statistically. Furthermore, it is found that while d3 and d4 variables affect the employment negatively, d5 variable affects employment positively. And in paralel with the results in Appendix 5, it is observed that the coefficients of variables are significant, 1% increase in foreign direct investments reduces the female employment at the rate of 0,15% and 1% increase in economic growth raises the female employment at the rate of 0,63%. When the dummy variables are analysed, it is found that only d5 variable affects female employment positively and significantly. Generally, in both two models, it is revealed that foreign direct investments reduce employment and female employment contrary to theoretical expectations and economic growth increases employment and female employment in line with theoretical expectations as to the estimation results of cointegration coefficients.

5. Conclusion

Foreign direct investments have generally accepted as favourable inflows especially by developing nations as they bring along not only financial but also technological assets and know-how. On the other hand, it is observed that there is a failure in reaching a consensus about the effects of foreign direct investments and economic growth on employment in Turkey. This situation may derive from the methods of analysis and unnoticed structural changes in time series due to endogenous/exogenous crisis. Futhermore, it is determined that empirical studies examining the effects of foreign direct investments and economic growth on female employment in Turkey are absent. This paper analyses the effects of foreign direct investments and economic growth on employment and female employment over the 2000-2013 period in Turkey with quarterly data; 2000:Q1-2013:Q4 terms. The analysis methods of the study are, Carrion-i Silvestre et.al. (2009) unit root test with multiple structural breaks, Maki (2012)

cointegration test with multiple structural breaks and dynamic ordinary least squares (DOLS).

It is determined with the study that all variables are stationary at first difference by the results of Carrion-i-Silvestre et.al. (2009) unit root test. Maki cointegration test uncovers a long-term relationship between employment& female employment and foreign direct investments&economic growth. And according to the DOLS method used for the estimation of cointegration coefficients, it is asserted that foreign direct investments affect employment and female employment negatively contrary to theoretical expectations, whereas economic growth affect employment and female employment positively in line with theoretical expectations. Furthermore, the study reveals that the coefficients of variables are statistically significant. It is thought the entrance of FDI inflows are noncontributory for creating employment as they generally take place by company mergers or acquisitions in Turkey.

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Appendixes

Appendix 1: CS Multiple Structural Unit Root Test Results

Variables	P_T	MP_T	MZ_α	MSB	MZ_T	Break Dates
lnempsa	18.34 (9.15)	17.88 (9.15)	-24.76 (-47.09)	0.14 (0.10)	-3.47 (-4.84)	2001:Q3,2003:Q1,2004:Q4, 2008:Q3,2010:Q4
lnwempsa	20.07 (8.84)	18.87 (8.84)	-21.85 (-45.69)	0.15 (0.10)	-3.29 (-4.77)	2001:Q2,2003:Q1,2004:Q4, 2007:Q3,2012:Q2
lnfdisa	20.36 (9.03)	19.2 (9.03)	-22.66 (-46.72)	0.14 (0.10)	-3.32 (-4.83)	2001:Q4,2005:Q2,2007:Q1, 2008:Q4,2012:Q1
lnrgdpsa	23.22 (9.22)	20.88 (9.22)	-20.77 (-46.45)	0.15 (0.10)	-3.22 (-4.79)	2001:Q4,2005:Q4,2007:Q3,2009:Q1, 2010:Q3
Δlnempsa	3.67* (9.31)	3.26* (9.31)	-135.1* (-46.62)	0.06* (0.10)	-8.21* (-4.79)	–
Δlnwempsa	3.67* (8.09)	3.46* (8.09)	-103.5* (-44.05)	0.06* (0.10)	-7.19* (-4.68)	–
Δlnfdisa	0.10* (9.34)	0.09* (9.34)	-146.4* (-47.25)	0.01* (0.10)	-48.21* (-4.83)	–
Δlnrgdpsa	3.83* (9.12)	3.66* (9.12)	-116.2* (-46.08)	0.06* (0.10)	-7.62* (-4.78)	–

Explanations: Δ symbol states first difference operator,* symbol states that the series are stationary at 5% significance level. Critical values are expressed parenthetical. The test method determined the critical values and the dates of structural breaks.The dates of structural breaks are given in the results of test (realized with level values) for showing the breaks in the original series.

Appendix 2: Maki Cointegration Test Results for Model 1

Model	Test Statistic Values	1% Critical Value	5% Critical Value	10% Critical Value	Break Dates
Model 0	-7.239*	−6.296	−5.760	-5.491	2002:Q4, 2004:Q4, 2008:Q3,2010:Q4 ve 2011:Q4
Model 1	-6.654*	−6.530	−5.993	-5.722	2001:Q3, 2003:Q1, 2004:Q4, 2007:Q1 ve 2010:Q4
Model 2	-6.934	−7.839	−7.288	-6.976	2001:Q3, 2003:Q1, 2004:Q4, 2008:Q1 ve 2009:Q2
Model 3	-8.141**	−8.713	−8.129	-7.811	2001:Q3, 2003:Q1, 2004:Q4, 2005:Q4 ve 2009:Q2

Explanations: When, the numbers of dependent variables are two (RV=2**)** and break number (m) is 5, critical levels in 1%, 5% and 10% significance level are obtained from Maki (2012,2013).* and ** symbols refers the cointegration relation respectively in 1% and 5% significance level.

Appendix 3: Maki Cointegration Test Results for Model 2

Model	Test Statistic Values	1% Critical Value	5% Critical Value	10% Critical Value	Break Dates
Model 0	-5.605*	−6.296	−5.760	-5.491	2000:Q4, 2003:Q1, 2004:Q4,2008:Q3 ve 2011:Q2
Model 1	-7.486*	−6.530	−5.993	-5.722	2003:Q1, 2004:Q1, 2004:Q4, 2007:Q1 ve 2010:Q3
Model 2	-6.863	−7.839	−7.288	-6.976	2001:Q2, 2003:Q1, 2005:Q2, 2007:Q4 ve 2009:Q1
Model 3	-8.957**	−8.713	−8.129	-7.811	2003:Q1, 2004:Q4, 2005:Q4, 2009:Q1 ve 2012:Q2

Explanations: When, the numbers of dependent variables are two (RV=2**)** and break number (m) is 5, critical levels in 1% and 5% significance level are obtained from Maki (2012,2013).* and ** symbols refers the cointegration relation respectively in 1% and 5% significance level.

Appendix 4: The Estimation Results of Cointegration Coefficients for Model 1

Dependent Variable: lnempsa			
Variables	**Coefficients**	**t-statistics (p-value)**	**Standard Error**
lnfdisa	-0.088	-4.803 (0.000) *	0.018
lnrgdpsa	0.226	3.397 (0.001) *	0.066
d1	0.0004	0.03 (0.975)	0.015
d2	0.035	1.491 (0.143)	0.023
d3	-0.038	-2.246 (0.03) **	0.023
d4	-0.05	2.412 (0.02) **	0.020
d5	0.11	8.234 (0.000) *	0.013
Constant Term	2.455	13.151 (0.000) *	0.186

Explanations: R^2 and adjusted R^2 values are respectively 0.93 and 0.91. The values between parentheses states the probability (p) values and the significancy of the coefficients at *; 1%, **; 5% significance level. Newey-Best bandwidth is used in long-term covariance estimation. Lead and lag lengths are accepted maximum 4 according to Schwarz information criterion. It is found that lead and lag lengths are respectively 2 and 0. The problems of autocorrelation and heteroscedastic are solved with Newey-Best method. Dummy variables are taken as, d1; 2001:Q1, d2; 2005:Q4, d3; 2008:Q3, d4; 2009:Q2, d5; 2010:Q4.

Appendix 5: The Estimation Results of Cointegration Coefficients for Model 2

Dependent Variable: lnwempsa			
Variables	**Coefficient**	**t-statistics (p-value)**	**Standard Error**
lnfdisa	-0.150	-4.361 (0.000) *	0.034
lnrgdpsa	0.627	21.127 (0.000) *	0.029
d1	-0.081	-0.563 (0.575)	0.144
d2	0.130	1.069 (0.291)	0.122
d3	-0.078	-1.222 (0.227)	0.064
d4	-0.121	-0.99 (0.327)	0.123
d5	-0.293	-2.354 (0.023) **	0.124
Constant Term	1.280	1.899 (0.064) ***	0.674

Explanations: R^2 and adjusted R^2 values are respectively 0.74 and 0.68. The values between parentheses states the probability (p) values and the significancy of the coefficients at *; 1%, **; 5%, ***; 10% significance level. Newey-Best bandwidth is used in long-term covariance estimation. Lead and lag lengths are accepted maximum 2 according to Schwarz information criterion. It is found that lead and lag lengths are respectively 1 and 0. The problems of autocorrelation and heteroscedastic are solved with Newey-Best method. Dummy variables are taken as, d1; 2000:Q4, d2; 2001:Q2, d3; 2007:Q1, d4; 2008:Q3, d5; 2009:Q1.