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Drivers of Employment Elasticities in Kenya

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Abstract
The relationship between output growth and employment elasticities has been of intense debate among many economists. Though there is no conflict between the two objectives, the question that arises is the rate at which employment growth responds to economic growth. The policy focus on employment in Kenya is manifested by the sheer number of employment targeted development plans and Sessional papers that have been formulated. Basically, all the policy documents developed by the government have premised employment creation on economic growth. The purpose of the study was therefore to determine the drivers of employment elasticities in Kenya. Empirical findings indicated that the first lag of employment elasticity, average wage, inflation rate, labour force participation rate, first and second lags of labour force participation rate, population density, first and second lags of foreign direct investment to be the short run drivers of employment elasticity. Empirical findings also indicated that exchange rate, foreign direct investment and population density were the long run drivers of employment elasticity in Kenya. The study recommends that policy measures to control inflation should be tightened and more efforts to attract foreign direct investment to be undertaken. The study further recommends that a stable exchange rate should be maintained. Lastly, the government should harmonize the salary scale framework to regulate the wages in the country. This could be realized through salary adjustments based on a periodical and systematic evaluation of wage parameters in the public sector and taking cognizance of the prevailing economic dynamics.
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1. Introduction

The government of Kenya has undertaken a variety of actions to enhance creation of employment opportunities. In the Development Plan (1964-1970), the government aimed to increase employment through fiscal policies that targeted growth oriented development strategy, high wage policy, Kenyanization Programme and the Tripartite agreements of 1964 (Republic of Kenya, 1974). Under the Tripartite Agreement, the government and the private sector employers undertook to increase employment by 15 and 10 per cent, respectively while the trade unions were to observe a wage restraint for a year. The trade unions were also to observe industrial action free period (Republic of Kenya, 1969).

During the period 1964/65 and 1970/71, recurrent revenues of the government grew at over 16 per cent a year, while recurrent expenditures grew at only 10 per cent (Republic of Kenya, 1974). Tax revenues also increased from 16 per cent of GDP in 1964/65 to 23 per cent in 1971/72. This increase was achieved by progressively raising the average burden of all taxes, except for import duties. Ghai (1968) observed that the rate of increase in employment during the period was low in relation to output growth and employment projections. While real output increased at an annual rate of 6.3 per cent between 1964 and 1969, enumerated employment grew at a rate of 3.5 per cent compared to a projected rate of 5.8 per cent per annum. The implication was that the rate of growth in employment did not match the rate of growth of the economy.

The Development Plan (1966-1970) acknowledged that the country's economic growth rate had been impressive, growing at an annual average rate of about 7 per cent from 1963 to 1966. The Plan thus recommended attention to fiscal policies that focused on restructuring of growth particularly towards agriculture and factor price changes (Republic of Kenya, 1967). It was envisaged that these two measures could go a long way in enhancing employment creation (Republic of Kenya, 1972). The Plan identified foreign investment and adoption of foreign technology as the factors, which would have a bearing on the factor proportions. The Plan also advocated for the replacement of capital-intensive techniques by labour-intensive techniques of production. The government was also to put more resources into labour-intensive sectors like the road schemes and to invest in training to enhance productivity and employability of labour. Another strategy of increasing jobs proposed in the Plan was to use fiscal policy measure such as tax system to encourage a full utilization of existing industrial capacity (Republic of Kenya, 1972). Over the Plan period, GDP growth rate averaged 6.4 per cent while the total wage employment rose by 46,000 which was short of the Development Plan target of 70,000 new jobs annually (Republic of Kenya, 1972). This was a reflection of low employment elasticity compared to output growth.

Sessional Paper No. 10 of 1973 on Employment acknowledged that creation of more jobs could only be achieved by a sustained high rate of growth in the economy (Republic of Kenya, 1973). The Sessional Paper ran

concurrently with the Development Plan of 1974-1978 and envisioned sustaining the rate of growth in GDP at 7 per cent per year from 1974 up to 1980, a growth rate of 6 per cent per annum for agriculture and 8 - 9 per cent growth for non-agricultural industries (Republic of Kenya, 1973). It also entailed the development of infrastructure and other amenities, rural works programmes, Tripartite Agreements (1979) and the promotion of informal and *jua kali* sector as a way of creating employment (Omolo, 2010). During the Plan period 1974-1978, there was only 1 per cent increase in the numbers employed, well below the target growth of 4.5 per cent as set out in the Development Plan (1974-1978). This was compared to the average GDP growth of 4.7 per cent per year (Republic of Kenya, 1974; 1975; 1977; 1978). This revealed a low employment elasticity of growth.

Sessional Paper No. 2 of 1985 on Unemployment identified the major causes of unemployment in Kenya as rapid growth of the labour force, low economic growth rate, job selectiveness, seasonality of some industries and skills imbalance (Omolo, 2012). Other causes of unemployment were identified as inappropriate technology and failure of development programmes to focus on areas with greater employment potential (Omolo, 2012). The policy paper proposed fiscal policies that were aimed at achieving a high growth rate of 6 per cent per annum through increases in agricultural productivity, support measures in favour of the small enterprises sector and a competitive industrial sector.

The policy paper departed from previous development strategies by shifting away from heavy dependence on import substitution and advocated for decentralization through District Focus for Rural Development. In terms of outcome, the Sessional Paper No. 2 of 1985 realized a decreasing importance of formal sector employment and growing significance of informal sector employment. The employment growth in the informal sector rose from 9.72 per cent in 1986 to 130.37 per cent in 1991. According to Omolo (2010), the high growth in the informal sector was due to the liberalization policies that excavated in 1990s and the negative impact of SAPS that resulted in the switching of workers from formal to informal sector. The formal sector growth averaged 3.38 per cent for the period 1986 to 1991, while GDP averaged a growth rate of 4.9 per cent, respectively (Omolo, 2010).

The government formulated Sessional Paper No. 2 on *Small Enterprises and Jua Kali Development* in 1992. *The Sessional Paper* led to a policy framework that provided a balanced focus to Small and Medium Enterprises (SME) development in line with the national goals of fostering growth, employment creation, income generation, poverty reduction and industrialization (Republic of Kenya, 2002). The proposed policies were to be achieved through donor-supported programs. The services provided by the government included product development, market support, training, microfinance and technical skills upgrading. However, according to Ronge, Ndirangu, & Nyangito, (2002), the policy interventions only had minimal impact on employment creation. This was due to lack of strategies for policy implementation and lack of strict monitoring and control of the implementation process.

The Development Plan of 1994-1996 focused on poverty reduction and employment creation in the rural economy by targeting agriculture and urban informal sector (Republic of Kenya, 1994). The Plan proposed to avert growth in unemployment through fiscal policy measures such as diversifying the export base; expanding small-holder agricultural production and micro and small enterprises (MSE); improving infrastructure; and incorporating the SME Programme fully into the overall export promotion strategy (Republic of Kenya, 1994).

The Development Plan of 1994-1996 was followed by the Development Plan of 1997-2001 that focused on rapid industrialization for sustainable development, promotion of MSEs and the liberalization of the labour market (Republic of Kenya, 2001). The results showed that formal employment grew by an average of 1.61 per cent per year between 1994 and 2001. Informal sector employment grew at an average of 13.98 per cent during the same period. These outcomes revealed that employment creation interventions implemented by the country facilitated growth in informal sector employment more than it did to formal sector jobs. Omolo (2010) noted that this period coincided with the time when the Kenyan labour market started suffering formal sector employment losses triggered by liberalization policies, and the promotion of growth and development of the informal and *jua kali* sector.

The Economic Recovery Strategy for Wealth and Employment Creation (ERS, 2003-2007), was adopted in 2003. The central focus of the ERS (2003-2007) was job creation through sound macroeconomic policies, improved governance, efficient public service delivery, and public investments and policies that aimed at reducing the cost of doing business (Republic of Kenya, 2003).

In addition, the government was to modernize tax administration infrastructure of Kenya Revenue Authority (KRA) in order to strengthen its capacity to enforce tax collection and expand the tax base to target the informal sector. As a result of these strategies, Kenya's economic growth improved from 0.5 per cent in 2002 to 2.9 per cent in 2003, reaching a high of 7 per cent in 2007. During the same period, the economy created 466,000 jobs in 2003, 449,000 jobs in 2005 and 475,000 jobs in 2007 (Republic of Kenya, 2008). The number of jobs created was low compared to the target of 500,000 jobs per year for the entire plan period. The failure of the economy to meet the employment targets meant that the employment elasticity was low compared to the level of output growth since the employment projections were pegged on the economy's performance.

The First Medium Term Plan (MTPI, 2008-2012) instituted the first phase in the implementation of the *Kenya Vision 2030*. The MTP I (2008-2012) had projected an annual average economic growth rate of 10 per cent and

employment growth of 6 per cent yielding a total of 3.7million new jobs. However, an annual average of 511,000 new jobs were created in 2008-2012 against a target of 740,000 jobs per year (Republic of Kenya, 2013). During MTP II (2013-2017), the government targeted the economy to grow at 10 per cent and create an average of one million new jobs. However, an average of 826,600 jobs were created annually. The MTP III (2018-2022) targets to increase real GDP annual growth from an average of 5.5 per cent achieved over the 2013-2017 period to 7 per cent in order to support higher economic growth. It also aims to create over 6.5 million jobs over the Plan period. There is need therefore, to determine the drivers of employment elasticities in Kenya given the fact that the government has intensively attempted to use fiscal policy measures as instruments of employment creation.

2. Literature Review

2.1 Labour Demand Theory

The theory of labour demand has its roots from Marshall (1890) and Hicks (1930). The labour demand theory states that the demand for labour is a derived demand, since workers are hired for their contribution in the production of goods and services. A key feature of the theory is that price flexibility plays an important role in the correction of labour market disequilibrium and market clearing. Assuming that there are only two factors of production, the number of employee-hours hired by the firm (L) and capital (K), the aggregate stock of land, machines, and other physical inputs, the production function is written as:

$$Y = f(K, L) \tag{1}$$

Where Y is the firm's output. The theory assumes that production exhibits constant return to scale as described by F such that:

$$F_i > 0\ , F_{ii} < 0 \ \text{ and } \ F_{ij} > 0$$

Where F_i represents marginal products. Elasticity of substitution is given by the rate of change in the use of K to L from a change in the relative price of w to r, holding output constant. Elasticity of substitution is by given:

$$\sigma = \frac{\partial \ln(K/L)}{\partial \ln(w/r)} = \frac{F_L F_K}{Y F_{LK}} \tag{2}$$

Where σ measures the ease of substituting one input for the other when the firm can only respond to a change in one or both of the input prices by changing the relative use of two factors without changing output. The constant output labour demand elasticity which is the change in demand for labour from a change in its wage is given by:

$$\eta_{LL} = \frac{\partial \ln L}{\partial \ln w} \tag{3}$$

Where η_{LL} is labour demand elasticity. Equation (3) implies that:

$$\eta_{LL} = -(1 - s)\sigma < 0 \tag{4}$$

Where s, ($s = \frac{wL}{Y}$) is the share of labour in total revenue. Equation (4) implies that when output requires substantial amounts of labour for production, the constant output labour demand elasticity will be smaller, because the possible change in spending on other factors is small relative to the amount of labour being used. Consequently, the constant output cross-elasticity of demand for labour describes the response to labour from a change in the price of capital is given as:

$$\eta_{LK} = \frac{\partial \ln L}{\partial \ln r} \tag{5}$$

Or,

$$\eta_{Lk} = -(1 - s)\sigma > 0 \tag{6}$$

The scale effect is the factor's share times the product demand elasticity. The scale effect takes into account the possibility that output will change as a response to a change in the price of labour, and that in turn may affect the overall demand for labour. The scale effect which is the total response from a change in the wage is given as:

$$\eta'_{LL} = -(1 - s)\sigma - s\varepsilon \tag{7}$$

Where $\eta = \frac{\partial \ln Y}{\partial \ln P} = \frac{\%\ change\ in\ output}{\%\ change\ in\ prices}$

Equation (7) is the fundamental factor law of demand. It divides the labour demand elasticity into substitution and scale effects.

2.2 Empirical Literature

Crivelli, Furceri & Bernate (2012) assessed the effect of structural and macroeconomic policies on the employment-intensity of growth for 167 countries using an unbalanced panel over the period 1991–2009. The objective of the study was to provide estimates of employment-output elasticities and assess the effect of structural and macroeconomic policies on the employment-intensity of growth. The study employed two approaches. The first approach consisted of estimating elasticities using time-series regressions for each country using the equation:

$$\ln(e_t) = \alpha + \rho_1 \ln(e_{t-1}) + \beta_1 \ln(y_t) + \omega_t \tag{8}$$

Where e_t was the level of employment at time *t,* and y_t was the level of GDP at time *t,* α was the intercept coefficient, ρ_1, β_1 were the regression coefficients and ω was the error term. The main advantage of the time series regressions was to directly provide country-specific employment estimates. The second approach relied on a panel

framework in which long-term elasticities were estimated using country-specific estimates for GDP slopes and employment persistence using the equation:

$$\ln(e_{it}) = \alpha + \rho_1 \ln(e_{it-1}) + \rho_2 D_i \ln(e_{it-1}) + \beta_1 \ln(y_{it}) + \beta_2 \mathrm{D_i} \ln(y_{it}) + \omega_{it} \quad (9)$$

Where e_{it} was the level of employment for country *i* at time *t,* and y_{it} was the level of GDP for country *i* in time *t*. D_i was a country-specific dummy, α was the intercept coefficient, ρ_s, β_s were the regression coefficients and ω was the error term. The study found that point estimates of elasticities fell between 0–1, with the majority of them ranging between 0.3 and 0.8. The elasticities varied considerably across regions, income groups, and production sectors with the highest estimates recorded for the most economically developed regions, industry and service sectors. The study also found that structural policies aimed at increasing labour and product market flexibility and reducing government size had significant and positive impact on employment elasticities. Macroeconomic policies aimed at reducing macroeconomic volatility also had a positive and statistically significant impact on employment elasticities. The study recommended that in order to maximize the positive impact on the responsiveness of employment to economic activity, structural policies have to be complemented with macroeconomic policies aimed at increasing macroeconomic stability.

Slimane (2015) assessed the determinants of cross-country variations in employment elasticities mainly focusing on the role of demographic and macroeconomic variables. The study used an unbalanced panel of 90 developing countries from 1991 to 2011. The equation for a country's specific elasticities was given by:

$$\ln(e_t) = \alpha + \beta \ln(e_{t-1}) + \gamma \ln(y_t) + \omega_t \quad (10)$$

Where e_t was the level of employment at time *t*, y_t was the level of GDP at time *t,* β *and* γ were estimation coefficients, α was the intercept coefficient and ω_t was the error term. The study also estimated the long-term employment to GDP elasticities for each country through the equation:

$$\hat{\gamma}_{\mathrm{i}} = \alpha_i + \delta_1 m_i + \delta_2 S_i + \varepsilon_i \quad (11)$$

Where $\hat{\gamma}_{\mathrm{i}}$ was employment elasticity for country i, m denoted macroeconomic variables, *S* denoted structural variables, δ_1 and δ_2 were the estimation coefficients α_i was the intercept coefficient and ε_i was the residual term. The results of the study indicated that the elasticity estimates varied considerably across countries while employment elasticities were higher in more advanced and closed countries. Employment elasticity comparisons across countries revealed wide variation in employment elasticities with the highest estimates found in Comoros, Gabon, Cote d'Ivoire, Niger, Algeria, Madagascar and Togo. In contrast, employment elasticities were modest in other countries such as Bosnia (0.05), Ukraine (0.09) and China (0.10). Negative estimates were found for Serbia (-0.101), Belorussia (-0.112) and Romania (-0.238). The study also revealed that the macroeconomic policies aimed at reducing macroeconomic volatility had a statistically significant effect in increasing employment elasticities. Employment intensity of growth was found to be higher in countries with larger service sector and also for the countries with a higher share of urban population.

3. Methodology

3.1 Theoretical framework

To meet the objective of the study, labour demand theory was used. The labour demand theory is attributed to Marshall (1890) and Hicks (1930). The firm's production function describes the technology that the firm uses to produce goods and services. The firm's objective is to maximize profits that are given by:

$$PY = wL - rK \quad (12)$$

Where P is the output price, w is the price for labour (wage rate) and r is the price for capital.
The first order conditions are given by:

$$F_L - \lambda w = o \quad (13)$$

$$F_k - \lambda r = o \quad (14)$$

Where λ is a Lagrangian multiplier. The ratio of the two first order conditions shows that the marginal rate of technical substitution, $\frac{F_L}{F_K}$, equals the factor-price ratio, $\frac{w}{r}$, for a profit maximizing firm. Assuming a Cobb Douglas production function of the form:

$$Q = AL^{\alpha}K^{\beta} \quad (15)$$

Where Q is the level of output, A is technical efficiency, L is the labour input, K is capital input and α and β are elasticity parameters. The firms profit function is given by:

$$\pi = MAX_{L,K}\left[P\left(L^{\alpha}K^{\beta}\right) - wL - rK\right] \quad (16)$$

Where π is profit, P is the output price. w is wages and r is interest. The first order conditions for (L) and (K) respectively are given by:

$$\alpha P(L^{\alpha-1}K^{\beta} = w \quad (17)$$

$$\beta P(L^{\alpha}K^{\beta-1} = r \quad (18)$$

The equilibrium condition is given by combining the two first order conditions.

$$L = \left(\frac{\alpha P K^{\beta}}{w}\right)^{\frac{1}{1-\alpha}} \quad (19)$$

$$K = \left(\frac{\beta P K^{\alpha}}{r}\right)^{\frac{1}{1-\beta}} \quad (20)$$

Therefore,

$$K = \frac{\beta w L}{\alpha r} \quad (21)$$

Substituting equation (21) into equation (19) yields the demand function for labour, L

$$\alpha P(L^{\alpha-1}\frac{Y}{L^{\alpha}} = w) \quad (22)$$

$$L = \frac{\alpha P Y}{w} \quad (23)$$

Equation 23 is the derived labour demand function expressed as a function of output, real wage and the price level.

3.2 Empirical Model

Following the labour demand theory (Marshall, 1890 and Hicks, 1930), labour demand is a function of output, real wage and the price level as shown in equation 23. Relating labour demand to employment elasticity, the study improved on the model by Mouelhi and Ghazali (2014) by incorporating demographic factors. The demographic factors were included to assess the effect of agglomeration factors on employment elasticity. The estimatable equation was expressed as:

$$emp_t = f(infla_t, exch_t, openness_t, wage_t, popden_t, labforce_t, fdi_t,) \quad (24)$$

The variable emp_t was the aggregate employment elasticity for all the sectors in period t, $infla$ was the annual inflation rate, $exch$ was the nominal exchange rate (Kenyan shillings/US dollar), $openness$ was a proxy for trade openness, $wage$ was the average annual real wage, $popden$ was the population density, $labforce$ was labour force participation rate and FDI was foreign direct investment. Population density and labour force participation rate also gave the effect of labour supply on aggregate employment elasticity.

3.3 Definition and Measurement of Variables

Employment elasticity (EMP): It is the responsiveness of employment growth to economic growth and measured as the ratio of the relative change in employment to the relative change in output.

Inflation (INFLA): It is the **s**ustained increase in the general price level of goods and services in an economy over a period of time. It is measured by change in consumer price index (CPI).

Real exchange rate (EXCH): It is the nominal exchange rates adjusted for differences in price levels between two countries. It is measured as a product of the nominal exchange rate (Kenya Shilling against the US dollar) and the ratio of the consumer price index, with year 2010 taken as the base year in both countries.

Wage rate (WAGE): It is a measure of the price of labour. It is measured as the average monthly earnings per employee for each of the sectors, over time.

Population Density (POPDEN): It is a measure of the intensity of land use. It is measured as the average population per square kilometre.

Labour Force Participation rate (Labfoc): is defined as the section of working population in the age group of 16-64 in the economy currently employed or seeking employment. It is calculated as the labour force divided by the total working-age population. It is used as a proxy for those individuals aged between 16-64 years.

Foreign Direct Investment (FDI): It is the direct investment in productive assets by an entity established in a foreign country and measured as a percentage of investment inflows to GDP.

Trade Openness (OPENNESS): It is **t**he extent which an economy is open to trade. It is measured as the ratio of the value of the total foreign (exports + imports) to the GDP

3.4 Data Type and Source

The study used annual time series data for the period 1970 to 2016. The choice of the period was primarily informed by availability of data. Data was obtained from different sources as indicated in Table 3.1.

Table 3.1: Data Sources

VARIABLE	DATA SOURCE
Employment elasticity	Computed from data collected from Kenya economic surveys
Inflation, Exchange rate	Central Bank of Kenya annual reports and Kenya economic surveys
Foreign Direct Investment	Kenya economic surveys
Trade Openness	The National Treasury reports
Labour Force, Population Density	World Bank's Kenya data base
Wage rate	Kenya statistical abstracts

3.5 Testing for Stationary of Data

To detect the presence of unit root in the series, the study employed the Clemente Montanes Reyes (CMR) test. The CMR test is based on the approach that allows for the possibility of having structural breaks in the mean of the series. Clemente, Montanes and Reyes (1998) extended the Perron and Vogelsang (1992) model to take care of two structural changes in the mean. The CMR test is based on a modification of the tests by Perron and Vogelsang (1992) known as the additive outlier (AO) and the innovative outlier (IO). The AO describes the break as occurring suddenly through changes in the mean and the IO views the break as sprouting slowly over time. The CMR test has a null hypothesis that the series has a unit root with structural break(s) against the alternative hypothesis that they are stationary with break(s). The CMR test hypothesis is specified as;

$$H0: y_t = y_{t-1} + \delta_1 DTB_{1t} + \delta_2 DTB_{2t} + \mu_t \quad (25)$$

$$H1: y_t = \mu + d_1 DU_{1t} + d_2 DTB_{2t} + \varepsilon_t \quad (26)$$

Where DTB_{1t} is a pulse variable equal to one if $t = TB_i + 1$ and becomes zero otherwise. $DU_{1t} = 1$ if $t > TB_i (i = 1,2)$ and zero otherwise. TB_1 and TB_2 represents the time periods when the mean is being modified.

3.6 Auto Regressive Distributed Lag Model

To achieve the objective of this study, equation 24 was estimated using an Auto Regressive Distributed Lag (ARDL) model. An ARDL model is a standard least squares regressions that include lags of both the dependent variable and explanatory variables as regressors (Greene, 2008). An ARDL model for employment elasticities with the regressors identified in the functional relationship 24 was expressed as:

$$emp_t = \beta_0 + \sum_{i=1}^{K} \beta_{1i}\, emp_{t-1} + \sum_{i=0}^{K} \beta_{2i} infla_{t-1} + \sum_{i=0}^{K} \beta_{3i} exch_{t-1} + \sum_{i=0}^{K} \beta_{4i} openness_{t-1} + \sum_{i=0}^{K} \beta_{5i} wage_{t-1} + \sum_{i=0}^{K} \beta_{6i} popden_{t-1} + \sum_{i=0}^{K} \beta_{7i} labforce_{t-1} + \sum_{i=0}^{K} \beta_{8i} fdi_{t-1} + \varepsilon_t \quad (27)$$

This was the general ARDL model which was then rewritten as:

$$emp_t - \sum_{i=1}^{K} \beta_{1i}\, emp_{t-1} = \beta_0 + \sum_{i=0}^{K} \beta_{2i} infla_{t-1} + \sum_{i=0}^{K} \beta_{3i} exch_{t-1} + \sum_{i=0}^{K} \beta_{4i} openness_{t-1} + \sum_{i=0}^{K} \beta_{5i} wage_{t-1} + \sum_{i=0}^{K} \beta_{6i} popden_{t-1} + \sum_{i=0}^{K} \beta_{7i} labforce_{t-1} + \sum_{i=0}^{K} \beta_{8i} fdi_{t-1} + \varepsilon_t \quad (28)$$

Equation 28 can be represented by introducing a lag operator $A(L)$ equal one minus the sum of coefficient of lagged values of the dependent variable. Hence the equation becomes:

$$A(L)emp_t = \beta_0 + \beta_2(L) infla_t + \beta_3(L) exch_t + \beta_4(L) openness_t + \beta_5(L) wage_t + \beta_6(L) popden_t + \beta_7(L) labforce_t + \beta_8(L) fdi_t + \varepsilon_t \quad (29)$$

The distributed lag form of the model that defined long run relationship was thus given as:

$$emp_t = \frac{\beta_0}{A(L)} + \frac{\beta_1}{A(L)} infla_t + \frac{\beta_1}{A(L)} infla_t + \frac{\beta_1}{A(L)} exch_t + \frac{\beta_1}{A(L)} openness_t + \frac{\beta_1}{A(L)} wage_t + \frac{\beta_1}{A(L)} popden_t + \frac{\beta_1}{A(L)} labforce_t + \frac{\beta_1}{A(L)} fdi_t + \varepsilon_t \quad (30)$$

The coefficients of equation 30 gave the long run estimates.

The short run effects of employment elasticity was given by the error correction version of ARDL model. The short run coefficients were estimated based on ECM derived from the ARDL model given in equation 31.

$$\Delta emp_t = \alpha_0 + \sum_{i=1}^{K} \alpha_{1i} \Delta(emp)_{t-1} + \sum_{i=0}^{K} \alpha_{2i} \Delta(infla)_{t-1} + \sum_{i=0}^{K} \alpha_{3i} \Delta(exch)_{t-1} + \sum_{i=0}^{K} \alpha_{4i} \Delta(openness)_{t-1} + \sum_{i=0}^{K} \alpha_{5i} \Delta(wage)_{t-1} + \sum_{i=0}^{K} \alpha_{6i} \Delta(popden)_{t-1} + \sum_{i=0}^{K} \alpha_{7i} \Delta(labforce)_{t-1} + \sum_{i=0}^{K} \alpha_{8i} \Delta(fdi)_{t-1} + \lambda ECT_{t-1} \quad (31)$$

Where α_i gave short run coefficients, λ was the speed of adjustment parameter and ECT was the residuals that were obtained from the estimated cointegration model of equation 30. The ARDL model was employed so as capture the partial adjustments and adaptive expectations in employment elasticity in Kenya as used by (Nakata & Takehiro, 2003) to estimate both partial adjustments and the elasticities of employment with respect to output and the relative wage in Japan. The partial employment adjustment model helped to explain the employment elasticity adjustment behavior and the observed employment fluctuations. The adaptive expectations model explained how the economy compensates for long-run adjustment of employment elasticity to changes in relative output by speeding up short-run employment adjustments.

4. Empirical Findings

4.1 Descriptive Statistics

The study analyzed the data for all the variables in order to discern its characteristics prior to estimation. This involved the determination of the mean median, maxima, minima and the standard deviation of the variables. Table 4.1 gives a summary of the descriptive statistics for the variables used in the study.

Table 4.1: Descriptive Statistics

Variable	Unit of Measurement	Mean	Maximum	Minimum	Std Dev.
Inflation rate	Percentage	12.11	45.98	1.55	8.21
Exchange Rate	Kshs/US dollar	43.19	101.05	7.02	32.05
Trade Openness	Percentage	57.92	74.57	44.38	6.90
Population density	People per sq.km	47	83.00	20	19
Average real wage	Kshs	324,391.81	515,712	229,654.32	79,637.40
Foreign direct investment	Percentage	0.86	2.73	0.04	0.70
Total Wage Employment	Number	1,472,466	2,553,500	644,500	504,738.1
Real GDP	Kshs millions	1,638,972	4,300,302	527,290	959,765.4
Labour force Participation	Percentage Number	74.67	84.12	56.00	27.11

Source: Derived from collected Data

According to Table 4.1, the average aggregate wage employment for the period under consideration was 1,472,466 persons. The total wage employment had a maximum of 2,553,500 workers and a minimum of 644,500 workers. The growth in wage employment over the study period was as a result of the Kenyan government efforts to create employment opportunities to absorb the country's growing labour force. This was achieved through various short, medium and long-term employment creation measures like Kenyanization Programme, tripartite agreements, active labour market policies, public works programs, foreign employment, and rural development over the plan period (Omolo, 2013).

Trade openness was used to reveal the impact of international trade on employment intensity. Trade openness was given as a ratio of the sum of exports and imports to the GDP and averaged 57.92 per cent with a maximum of 74.57 per cent and a minimum of 44.38 per cent. The level of trade openness experienced over the period of study means that Kenya has been open to international trade. The results are consistent with World Bank (2016) which established that Kenya has subscribed to an open trade policy.

Foreign Direct Investment was measured as a percentage of investments inflows to GDP. The estimation results presented in Table 4.1 shows that FDI ranged from 0.04 per cent to 2.73 per cent with an average of 0.86 per cent. The estimation results reveal that FDI inflows to Kenya have been highly volatile. This volatility could be attributed to low confidence of investors as a result of insecurity and political instability when FDI inflows were quite low as shown by a minimum value of 0.04 per cent. On the other hand, high FDI inflows could be attributed to improved investment environment through implementing various macroeconomic reforms. Population density in the country ranged between 20 people per square kilometre of land and 83 people per square kilometre of land with a mean of 47 people per square kilometre of land. The sample population density mean was low compared to the country's projected population density mean of 73.9 people per square kilometre in 2014 (Republic of Kenya, 2014).

Exchange rate was used to reveal the impact of external shocks on employment elasticity. On average the exchange rate was 43.19 Kshs/US$ with maximum and minimum values of 101.05 Kshs/US $ and 7.02 Kshs/US$ respectively. Therefore, the exchange rate over the study period was volatile. This implies that the country experienced low, mild, and high exchange rates at some points in the study period. The rate of inflation for the period under study ranged from 1.55 per cent to 45.98 per cent with an average of 12.43 per cent a standard deviation of 12.15. Overall, therefore, Kenya experienced mild, rapid and galloping inflation rates. The average rate of inflation was more than a single digit which was higher than the one envisaged in the EAC Monetary Union Protocol. According to this protocol, headline inflation rate should be about 8 per cent under macroeconomic convergence criteria (EAC, 2013). Kenya's output level was captured by real GDP. Over the period 1970-2016, the real GDP averaged Kshs.1, 638,972 million. The real GDP had a maximum of Kshs. 4,300,302 million and a minimum of Kshs. 527,290 million. The growth in real GDP over the study period could be attributed to the various development plans and strategies implemented by the government over the study period.

4.2. Unit Root Test Results

Unit root tests for all the variables were conducted so as to establish the order of integration. The test results for all the variables are reported in Table 4.2 and Table 4.3 and Figures A1-16 in the Appendix

Table 4.2: Clemente-Montañés-Reyes Unit Root Test with Double Mean Shift (At Levels)

Variable	Additive Outliers		Innovational Outliers	
	t-statistic	Optimal break points	t-statistic	Optimal break points
Inflation	-3.594	1991, 1996	-6.771*	1991,1993
Exchange rate	-2.650	1994, 2012	-4.010	1991, 2007
Population density	-2.562	1990, 2005	-0.043	1980, 1997
Labour force	-2.479	2000, 2004	-0.916	2004, 2010
Foreign direct investment	-5.164	1980, 2008	-6.207*	1979, 2009
Wage rate	-4.715	1999, 2007	-5.557*	1999, 2006
Trade openness	-4.231	1978, 1993	-4.555	1980, 1994
Employment elasticity	-10.899*	1988,2002	-4.313	1989, 1998

*Source: Derived from the collected data. Note * denotes rejection of the hypothesis at 5% significant level. 5 percent critical value for two breaks: -5.490*

The test statistic for CMR unit root is the minimum t-statistic. The estimation results of the CMR unit root test shown in Table 4.2 indicate that variables inflation rate, FDI, wage rate, and employment elasticity, were statistically significant at 5 per cent level. This is because the minimum t- value for these variables were smaller than the critical value of -5.490 at 5 per cent significance value. Thus, according to CMR unit root test, the null hypothesis of presence of a unit root with structural break(s) for variables GDP growth rate, inflation rate, FDI, wage rate and employment elasticity was rejected and the alternative hypothesis that the series are stationary was not rejected. This implies that these variables were stationary at levels suggesting that they are integrated of order zero, I (0).

According to Table 4.2, the test statistic for variables population density, exchange rate, labour force participation rate and trade openness, were not statistically significant at 5 per cent significance level. This means that the variables were not stationary at levels. Thus, according to CMR unit root test, these variables had at least one unit root and required to be differenced to become stationary. The series were, however, stationary at first difference and therefore integrated of order one, I (1) as shown in Table 4.3.

Table 4.3: Clemente-Montañés-Reyes Unit Root Test with Double Mean Shift (1st Difference)

Variable	Additive Outliers		Innovational Outliers	
	t-statistic	Optimal break points	t-statistic	Optimal break points
Exchange rate	-5.588*	1990, 1998	-5.312	1979, 2002
Population density	-6.248*	2001, 2004	-4.763	1998, 1999
Trade openness	-5.543*	1981, 1998	-4.547	1980, 1999
Labour force Participation rate	-4.733	1989, 2000	-5.910*	1997, 2003

*Source: Derived from the collected data. Note * denotes rejection of the hypothesis at 5% significant level. 5 percent critical value for two breaks: -5.490*

The structural breakpoints for key macro-economic variables in the series coincided with key economic developments in the country. For instance, the break points for FDI under the AO model coincided with high capital inflows in the country in 1979 due to Kenya's central position in the larger East African Community (EAC) and the Common Market for Eastern and Southern Africa (COMESA) (Mvungi, 2002). The Structural break in 2007 coincided with the post-election violence that occurred in that year. The breakpoints for FDI under IO model also coincided with the collapse of EAC in 1977 and political instability due to land clashes of 1992.The AO model picked 1991 and 1996 as the optimal break dates for inflation. The break dates under IO model for inflation were 1991 and 1993. The breakpoints under inflation for both AO and IO models could be explained by the political instability and the excess liquidity experienced in the country for the period 1991 to 1996. There was an expansion in liquidity held by commercial banks and the average liquidity ratio almost doubled the statutory requirement in 1992–1996 (Ngugi & Kabubo, 1998).

The years 1991 and 2007 were picked as the break dates for the variable exchange rate. The break date in 1991 could be attributed to the political instability and the high inflation rate of 20.084 per cent experienced in the country at the time. The break date in 2007 could be explained by the post-election violence of 2007. The breakpoint under AO model for exchange rate coincided with weakening of the Kenyan shilling against major trading currencies due to economic slowdown in Europe (Euro crisis) in 2011 (UNCTAD, 2012).

4.3 Empirical Results

Unit root tests results in Table 4.2 indicated that the variables used in the study mixed orders of integration, that is I (0) and I (1) suggesting that ARDL was the appropriate model for estimation. These variables included employment elasticity, average wage, exchange rate, inflation, labour force participation rate, population density,

trade openness and FDI. The ARDL model was preferred due to its ability to estimate the long and short-run parameters of the model simultaneously for the avoidance of the problems posed by non-stationary time series data. Pesaran and Shin (1999) showed that cointegrating systems can be estimated as ARDL models, with the advantage that the variables in the cointegrating relationship being either I(0) or I(1), without needing to pre-specify which are I(0) or I(1). Pesaran and Shin (1999), also note that unlike other methods of estimating cointegrating relationships, the ARDL representation does not require symmetry of lag lengths; each variable can have a different number of lag terms.

Before estimation of the ARDL, a bound test was estimated to determine whether the independent variables had a long-run relationship with the dependent variable. The bound tests were estimated using the approach proposed by Pesaran and Shin (1999) for testing long run relationship among the variables expressed in equation 24. The F-statistic tests for the joint significance of lagged variables. If the F-statistic falls below the lower critical value (Lower bound), the null hypothesis of no long-run relationship is accepted irrespective of the orders of integration but if the F-statistic falls above the upper critical value (upper bound), the null hypothesis of no long-run relationship is rejected (Pesaran and Shin, 1999). However, if the F- statistic falls between the lower and upper critical values, any inference would be inconclusive and knowledge of the order of integration of the variables will be needed before conclusive inferences are made. The bound test results are shown in Table 4.4.

Table 4.4: ARDL Bounds Test

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	K
F-statistic	10.12100	7
Critical Value Bounds		
Significance	I(0) Bound (lower Bounds)	I(1) Bound (upper bounds)
10%	2.12	3.23
5%	2.45	3.61
2.5%	2.75	3.99
1%	3.15	4.43

Source: Derived from collected data

The estimation results in Table 4.4 show an F-statistic value of 10.12 which is more than the upper bound value of 4.43 at one (1) per cent significance level thus rejecting the null hypothesis and concluding that there exists a long run relationship among the model variables. The results, therefore, justify the use of ARDL and ECM version of ARDL to derive the long run and short run relationships of the variables.

Before estimating the short and long run relationships of the variables, diagnostic tests were conducted to establish the ARDL statistical appropriateness. Equation 24 was employed to establish the optimal lag length and the goodness of fit. The adopted optimal lags by the Akaike's Information Criterion (AIC) automatic lag selection were (1, 2, 2, 0, 2, 0, 0, 2). The R-squared value was 95 percent. The estimated model had a F-statistic of 11.349 with a corresponding p-value of 0.0023. Since this p-value (0.0023) was less than the critical value of 0.5 at 5 per cent significance level, the null hypothesis of joint significance of the explanatory variables being equal to zero was rejected. The LM serial correlation test and Breusch Pagan –Godfrey tests were used to test for the presence of serial correlation and heteroscedasticity respectively. The estimated results gave an observed R- squared value of 1.0542 with a corresponding p-value of 0.28. The null hypothesis that there is no serial correlation was thus accepted at five per cent level. The p-value (0.4332) for the observed R-squared in Breusch Pagan Godfrey test also led to the acceptance of the null hypothesis of no heteroscedasticity at 5 per cent level.

The objective of the study was therefore realized by estimating the Auto regressive Distributed Lag (ARDL) model given in equation 24 for long run and an Error Correction Model (ECM) version of ARDL for short run sources of employment elasticities. The short run estimation output are given in Table 4.5.

4.3.1 Short Run Sources of employment elasticities in Kenya

The short run estimation was done in two stages. The first stage involved estimating the reduced cointegrating ARDL equation 24. The residuals got from estimation were then lagged once (ECT-1) and were used in the second stage to estimate the ECM version of ARDL model. The short-run results represent the coefficients of the differenced explanatory variables and they give short-run growth effects. The coefficients describe short-term growth in dependent variable resulting from previous period's growth in the independent variables. The results are presented in Table 4.5.

Table 4.5: Short-Run Effects of Various Variables on Employment Elasticities

Dependent Variable: Employment Elasticity			
Regressors	**Coefficients**	**t-Statistics**	**Probability value**
Δ Employment elasticity lagged once	0.521200***	3.494695	0.0017
Δ Average Wage	-0.001243**	-2.55348	0.0166
Δ Average Wage lagged once	0.004276	1.081493	0.2890
Δ Average Wage lagged twice	0.001528	0.277019	0.7839
Δ Exchange rate	-0.049085	-0.440872	0.2215
Δ Exchange rate lagged once	0.016436	0.783014	0.4404
Δ Exchange rate lagged twice	0.027306	1.542330	0.1346
Δ Inflation	-0.110033***	-2.73385	0.0094
Δ Labour Force Participation rate	0.04566**	2.621162	0.0156
Δ Labour Force Participation Rate lagged once	0.080886**	2.026210	0.0192
Δ Labour Force Participation Rate lagged twice	0.293105***	3.916707	0.0007
Δ Population Density	0.017609***	2.042731	0.0082
Δ Trade Openness	0.000975	0.679254	0.9463
Δ FDI	-0.718165	-1.567219	0.1681
Δ FDI lagged once	1.179770**	2.468262	0.0486
ΔFDI lagged twice	0.896711*	2.222010	0.0680
Error Correction Term	-1.921665***	-3.784790	0.0000

*Source: Derived from collected Data. Note: [***], [**] and * denote significant levels at 1%, 5% and 10% respectively. Δ denotes the first difference operator*

Table 4.5 indicates that only short-run coefficients for variables first lag of employment elasticity, average wage, inflation rate, labour force participation rate, first and the second lag of labour force participation rate, population density and the first and the second lag of FDI were statistically significant. This reflects presence of short-run relationship between employment elasticity and these variables.

Employment elasticity was the dependent variable and denoted the overall growth employment elasticity at time t. The annual employment elasticity was calculated by dividing the percentage change in employment by the corresponding percentage change in GDP during a given period to provide a time variability which is not possible with OLS estimates. The estimation results presented in Table 4.5 shows that the coefficient of the first lag of employment elasticity change is positive and statistically significant at one per cent level of significance. The change in employment elasticity in the current period impacts positively the change in employment elasticity after one period.

Inflation rate is viewed as a proxy for the level of economic stability in an economy and it is theoretically expected to have a negative effect on employment yield of economic growth. The coefficient of inflation was -0.11 and statistically significant at 1 per cent level. This implies that a one per cent increase in inflation rate will reduce employment elasticity by 0.11 per cent. The study results concur with Kapsos (2005), Crivelli *et.al* (2012) and Ghazali (2014) who found the rate of inflation to be negatively related with employment elasticity. Inflation can be expected to have negative effect on employment yield of output growth. This is because high rates of inflation mean high production costs in terms of high prices for inputs, raw materials and even labour. Instability in macroeconomic variables would thus imply limiting investment opportunities that would in turn create employment opportunities.

The population density variable had a coefficient of 0.031. The coefficient was positive and statistically significant at 1 per cent level. Therefore, a one per cent increase in the population density will cause a 0.031 increase in employment elasticity. This implies that increase in the population density growth rate enhanced employment yield of output growth. The study results concur with Adegboye, Egharevba & Edafe (2017), but contradict with Crivelli *et.al* (2012) who found population density to be negatively correlated with employment elasticity. The implication of the results is that in areas with high population density, the level of unemployment is also very high. This could mean that any change in employment growth would have a bigger impact than in areas which are densely populated.

The annual average wage had a negative sign for its coefficient in the current period and statistically significant at 5 per cent level. The magnitude of annual average wage was -0.0012; this indicates that a one per cent increase in annual average wage will lead to a decrease in employment elasticity by 0.0012 per cent. The implication is that average wages have an indirect relationship with employment elasticity. The results concur with Ghazali (2014) that higher average annual real wages reduce employment elasticity. However, as the period moves into the future, the coefficient becomes insignificant. A one-unit growth of average wage affects employment elasticity by 0.004 one period latter and 0.001 two periods after. The study findings imply that higher average annual real wages reduce employment-growth elasticity within the current year. This is because higher wages and non-wage benefits increases the cost of production and could constrain growth-induced employment opportunities.

Labour force participation rate was included in the model to assess the effects of labour supply on employment elasticity. The coefficient of labour force participation variable was found to be positive with a magnitude of 0.045 and statistically significant at 5 per cent level in the current period. The coefficients of the first and second lags of labour force participation variable were also positive and statistically significant at 5 and 1 per cent levels respectively. The magnitude of effect increases as the variable move into the future as indicated by higher value of the coefficient as compared to the previous value. This implies that an expanding supply of labour leads to a more employment-intensive growth. This concurs with the classical theoretical prediction that higher labour supply will lead to lower average wages and ultimately lead to an increase in demand for labour input (Ambrosi, 1986). The results are consistent with Chan (2001) who found a positive and significant relationship between labour force participation rate and employment elasticity. The estimation results, however, contradict Crivelli (2012), who found labour force participation rate to be negatively correlated with employment-output elasticities for advanced countries.

A probable explanation for the relationship between labour force participation rate and employment elasticity could be the existence of a dualistic economy in Kenya where there exists a big difference between formal sector and informal sector wages due to the existence of labour market imperfections. The rates of rural to urban migration have tended to exceed the absorptive capacity of the modern sector, leading to the growth in the informal sector. This means that employment growth would be responsive to any slight change in the growth of labour force. Another probable explanation could be that population growth stimulates technological progress and makes possible the realization of economies of scale that provide incentives for the adoption of more efficient techniques and institutional arrangements (Kawagoe, Hayami and Ruttan, 1985). This would thus imply that population growth promotes development by increasing the economy's productive capacity which in turn create employment elasticities.

The coefficient of foreign direct investment variable was found to be negative with a magnitude of -0.718 and was statistically insignificant at all three levels in the current period. The magnitude of the first lag of FDI was 1.179 and statistically significant at 5 per cent level. The magnitude of the second lag was 0.896 and statistically significant at 10 per cent level. This implied that a unit increase in foreign direct investment increases employment elasticity by 0.1179 in the first year and 0.896 in the second year respectively. The increase in FDI in the current period affects employment elasticity after one period and also two periods later. The study results concurs with Adegboye, Egharevba, & Edafe (2017), who found that lagged values of FDI had a positive impact on employment elasticity in Sub-Saharan Africa. A probable explanation could be the bureaucratic procedures involved in the release of funds from abroad. Even if the funds were to be released and invested immediately, the production in the affected sectors of the economy will only be realized with a lag since it takes time to establish the investments. Foreign direct investment also generates employment through forward and backward linkages with domestic firms.

Table 4.5 reveals that the coefficient of the trade openness variable though positive with a magnitude of 0.0009, was not statistically significant at all the three levels of significance. The results concur with (Bruno, Falzoni, & Helg, 2003) who did not find any statistically significant relationship between trade openness and labour demand elasticity. The results, however, contradict Crivelli (2012), who found that employment elasticities tend to be higher in more advanced and closed economies. Despite the insignificant relationship between trade openness and employment elasticity, the positive relationship among the two variable is consistent with the trade theory. Wood (1999), ascertains that trade openness can lead to an increase in labour demand in labour-abundant countries due to comparative advantage. This in turn is expected to increase labour-demand elasticities as labour comes under pressure due to stiffer competition in the goods and labour markets.

Just like inflation, exchange rate was also used in empirical analysis as an indicator for assessing macroeconomic stability. The coefficient of exchange was found to be negative and statistically insignificant at all levels in the current period. The coefficients of the first and second lags of exchange rate were, however, positive but also statistically insignificant at the three levels of significance. The study results contradict Ghazali (2014) who found a negative and highly statistically significant relationship between exchange rate and employment elasticities in Tunisia.

The co-efficient of the error term or the adjustment factor had a magnitude of -1.921 and was statistically significant at 5 per cent level. The fact that the error correction term was negative provides evidence about the existence of a long-run association among the variables. The coefficient of the error term showed the proportion of the current changes in employment elasticity that were explained by the disequilibrium error in the previous period.

4.3.2 Long Run Sources of Employment Elasticities in Kenya

The long run coefficients of the determinants of employment elasticities showed how employment elasticities reacted to a permanent change in the independent variables. The long run results are given in Table 4.6.

Table 4.6: Long-Run effects of various variables on Employment elasticities

Dependent Variable	Employment elasticities		
	Coefficients	**t-Ratio**	**Probability**
Average Wage	-0.000002	-1.389820	0.1759
Exchange Rate	-0.143605**	-2.397212	0.0335
FDI	0.061486***	4.205235	0.0003
Inflation	-0.005741	-0.733607	0.4695
Labour Force Participation Rate	0.009164	0.966389	0.3424
Population Density	0.053665**	2.604860	0.0404
Trade Openness	-0.000507	-0.068022	0.9463
C	-24.207072***	-4.086920	0.0004

Source: Derived from collected Data. Note: [***] and [**] *denote significant levels at 1%, and 5% respectively*.

Table 4.6 indicates that only long run coefficients for variables exchange rate, FDI, and population density were statistically significant. This reveals presence of long run relationship between employment elasticity and these variables. The coefficient of exchange rate variable was found to be negative with a magnitude of 0.143 and statistically significant at 5 per cent level. Therefore, a one per cent increase in the exchange rate will cause a 0.143 decrease in employment elasticity in the long run. This implies that increase in the rate of exchange rate (depreciation of the domestic currency) deterred employment yield of economic growth. A probable explanation is that depreciation of the domestic currency contracts the growth of real output due to high dependence on import of inputs and capital goods. Alexandre, Bacao, Cerejeira & Portela (2010) finds similar results; a negative relationship between exchange rate and employment elasticity for 23 OECD countries. The results are also consistent with Mouelhi and Ghazali (2014) who found that nominal exchange rate was negative and highly statistically significant to employment elasticity across all specifications in Tunisia.

The FDI variable had a statistically significant coefficient of 0.061 at one per cent level of significance. Therefore, a one per cent increase in FDI led to 0.061 per cent increase in employment elasticity. This implies that an increase in FDI enhanced employment elasticity in the long run. Foreign direct investment brings investable financial resources, provides new technologies and improves the efficiencies of existing technologies and therefore acts as a stimulant for employment growth. The results contradict Akinkugbe (2015) who found that the surge in FDI inflows has not manifested in significant formal sector job creation and reduction in unemployment levels in the long run.

The coefficient of population density variable was found to positively influence employment elasticity. The coefficient was also statistically significant at 5 per cent level with a magnitude of 0.053. Therefore, a one unit increase in population density increases employment elasticity by 0.053 per cent. This meant that an increase in population density also led to a high employment elasticity in the long run. The estimation results contradict Crivelli *et.al* (2012), who found population density to be negatively correlated with employment-output elasticities, for 167 countries.

5. Conclusions and Policy Implications

This study concludes that the first lag of employment elasticity, average wage, inflation rate, labour force participation rate, first and second lags of labour force participation rate, population density, first and second lags of FDI were the short run drivers of employment elasticity. Empirical findings also indicate that exchange rate, FDI and population density are the long run drivers of employment elasticity in Kenya. The study recommends that policy measures to control inflation should be tightened. This could be realized by devising strategies to increase the tax base and improve the tax compliance in the country. The study also recommends that efforts to attract more foreign direct investment should be undertaken. Government through relevant agencies should increase the ease of doing business in the country. This could be achieved by enhancing infrastructural development in the country which is a key driver of FDI. Another measure to enhance FDI in the country could be through enhancement of foreign direct investments incentives. These measures can be directed by the National Treasury. A stable exchange rate should be maintained. This could be achieved by growing and diversification of exports. In addition, tourism which is a major source of foreign currency can be promoted by investing in product diversification in the tourism sector. Lastly, the government should harmonize the salary scale framework to regulate the wages in the country. This could be realized through salary adjustments based on a periodical and systematic evaluation of wage parameters in the public sector and taking cognizance of the prevailing economic dynamics.

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APPENDIX

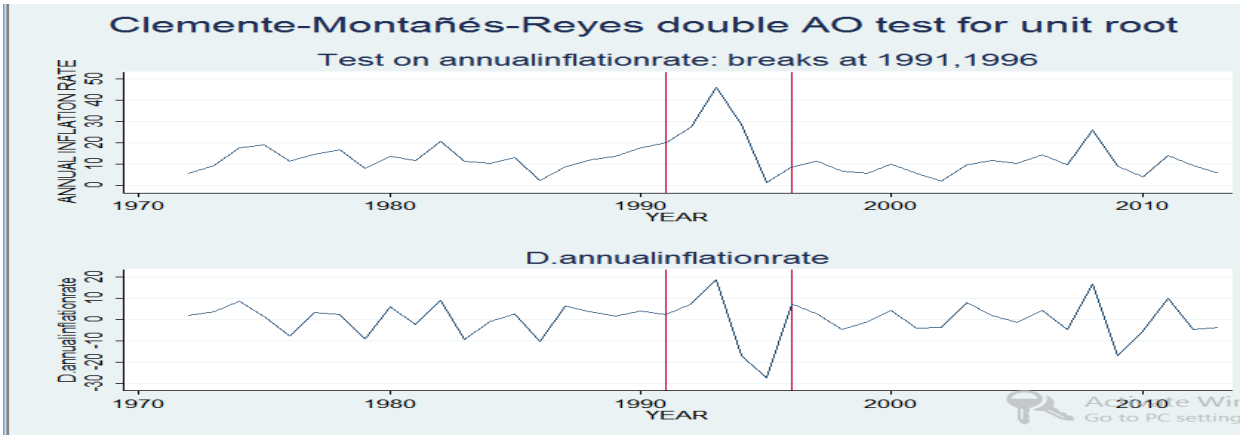

Figure A1.1: Clemente-Montañés -Reyes AO Test, Inflation.

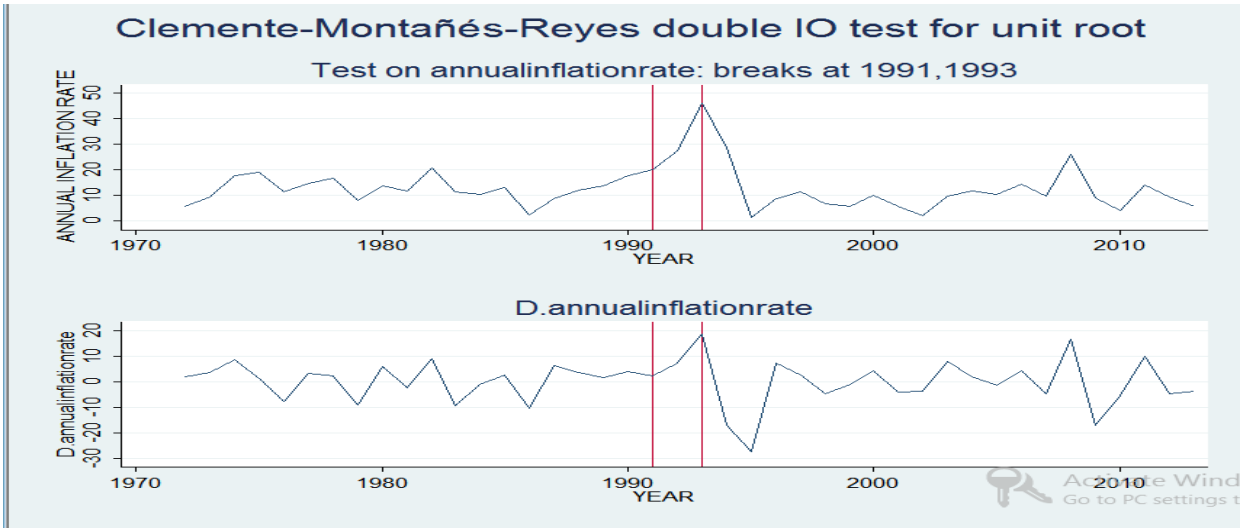

Figure A1.2: Clemente-Montañés -Reyes IO Test, Inflation

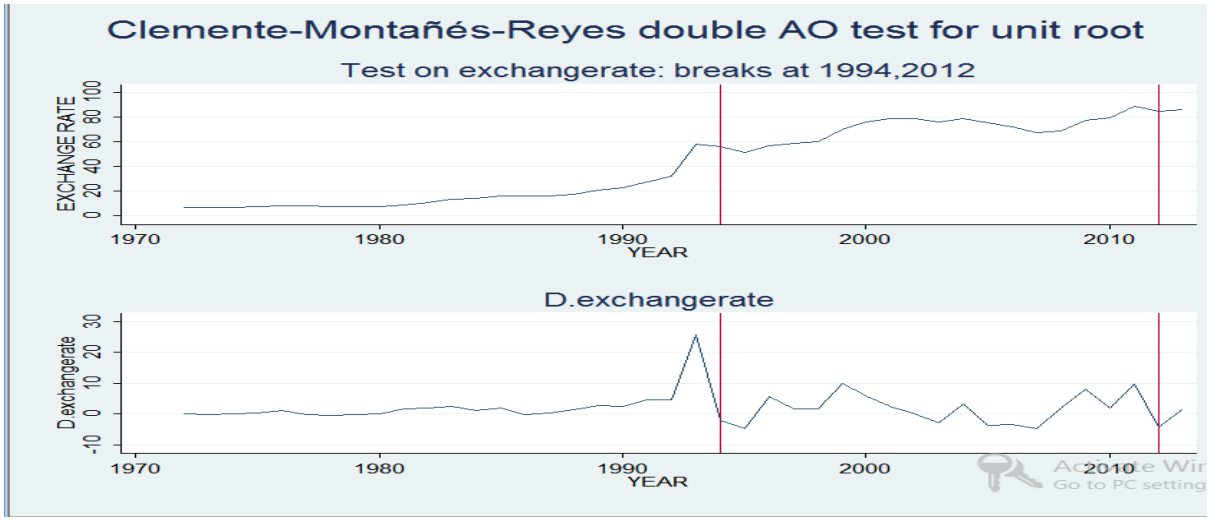

Figure A1.3: Clemente-Montañés -Reyes AO Test, Exchange rate

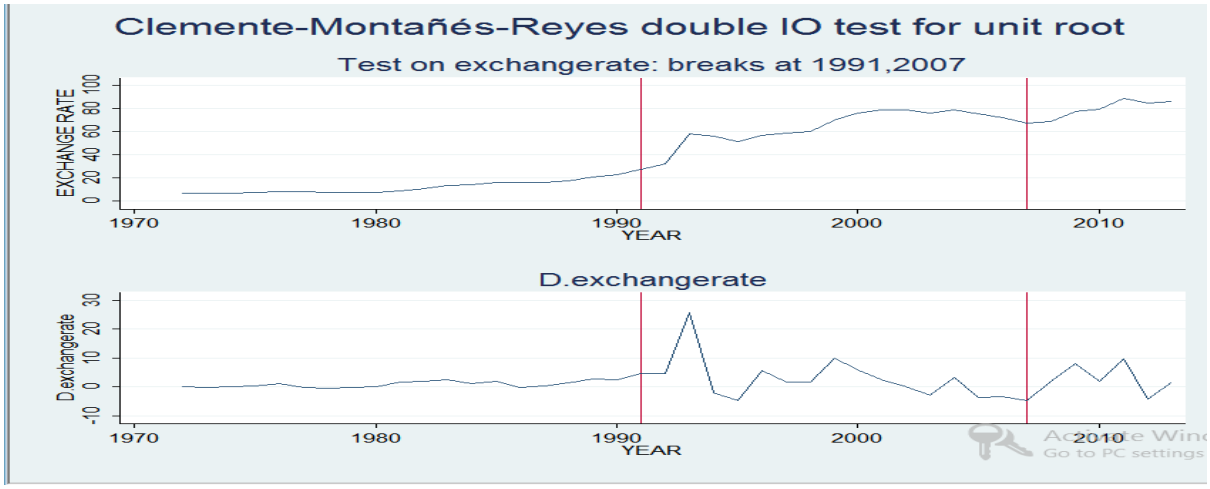

Figure A1.4: Clemente-Montañés -Reyes IO Test, Exchange rate

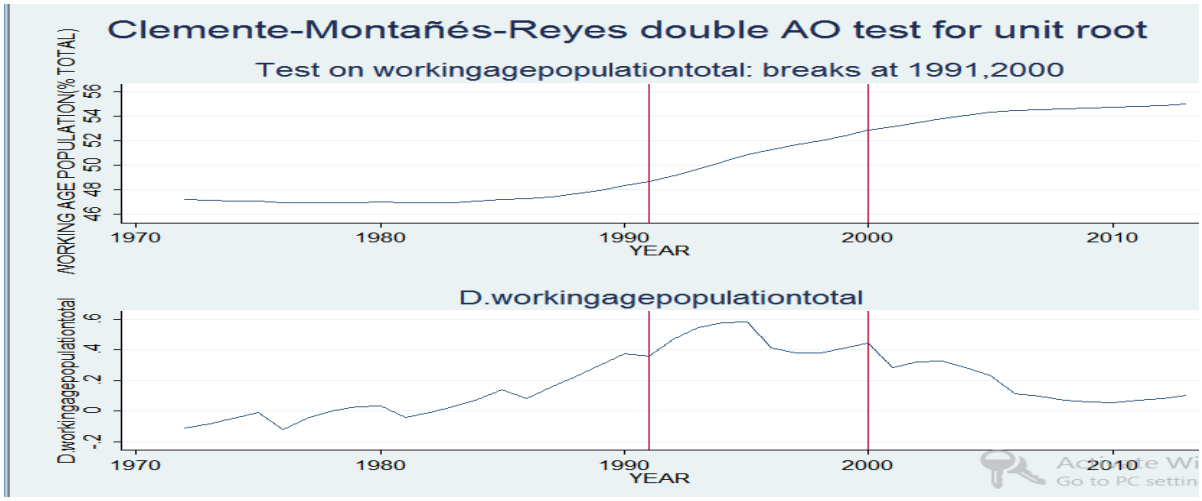

Figure A1.5: Clemente-Montañés -Reyes AO Test, Working age population

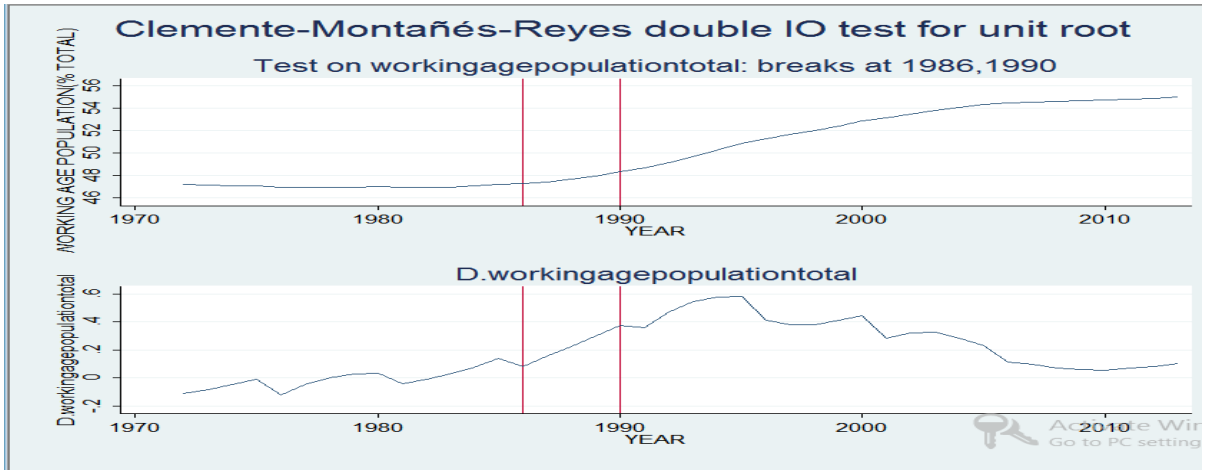

Figure A1.6: Clemente-Montañés -Reyes IO Test, Working age population

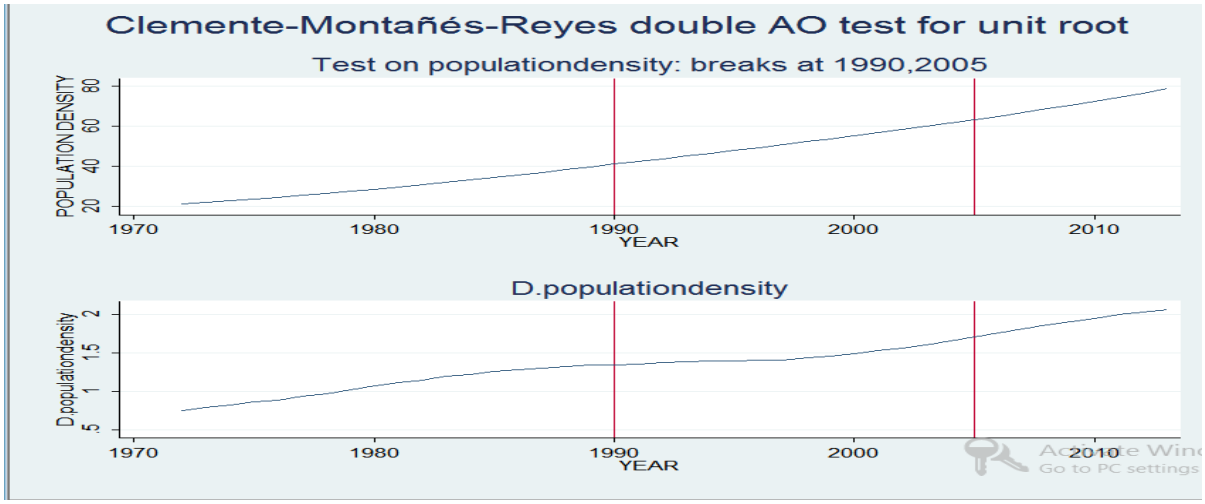

Figure A1.7: Clemente-Montañés -Reyes AO Test, Population density

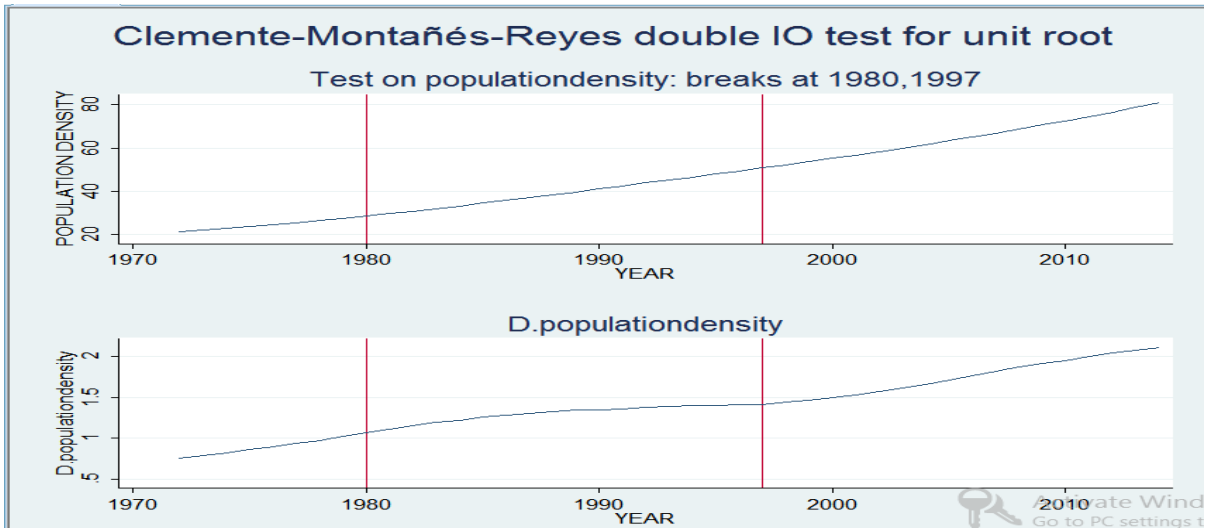

Figure A1.8: Clemente-Montañés -Reyes IO Test, Population density

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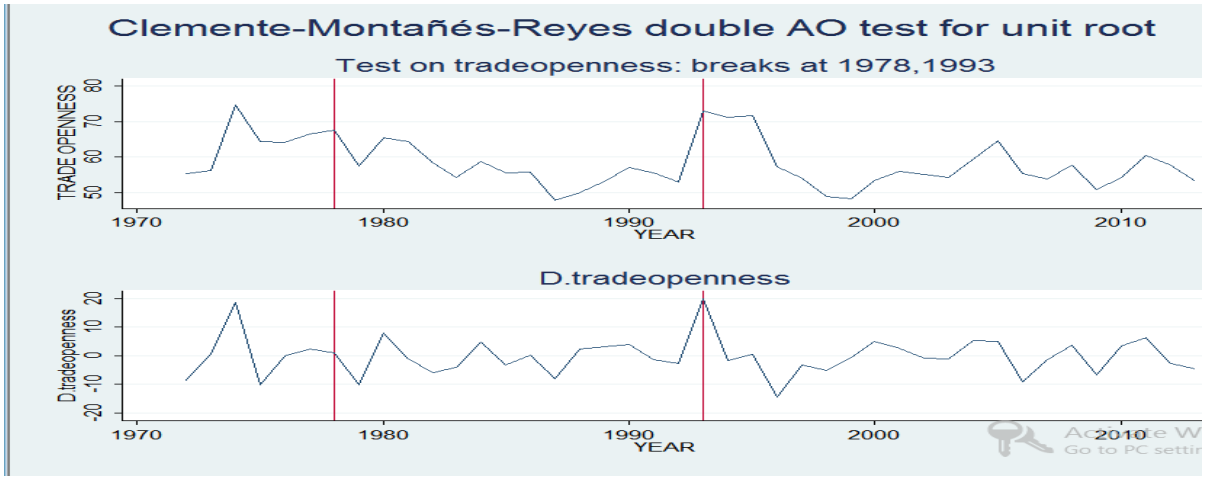

Figure A1.9: Clemente-Montañés -Reyes AO Test, Trade openness

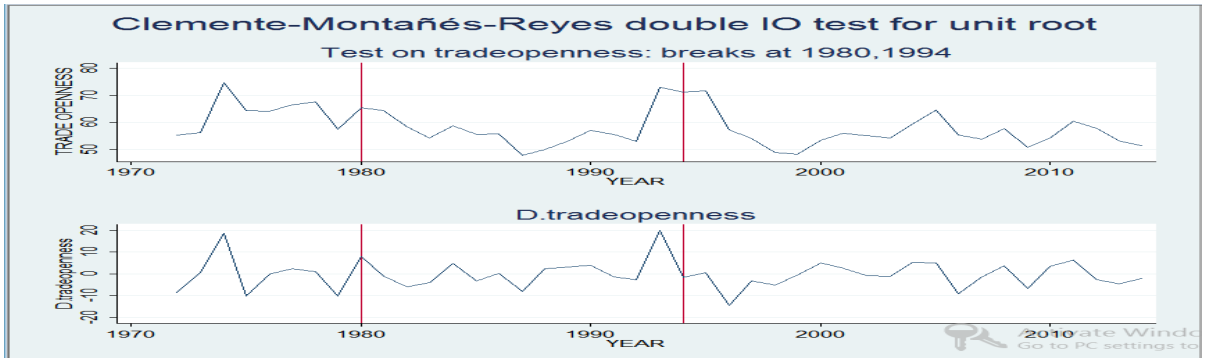

Figure A1.10: Clemente-Montañés -Reyes IO Test, Trade openness

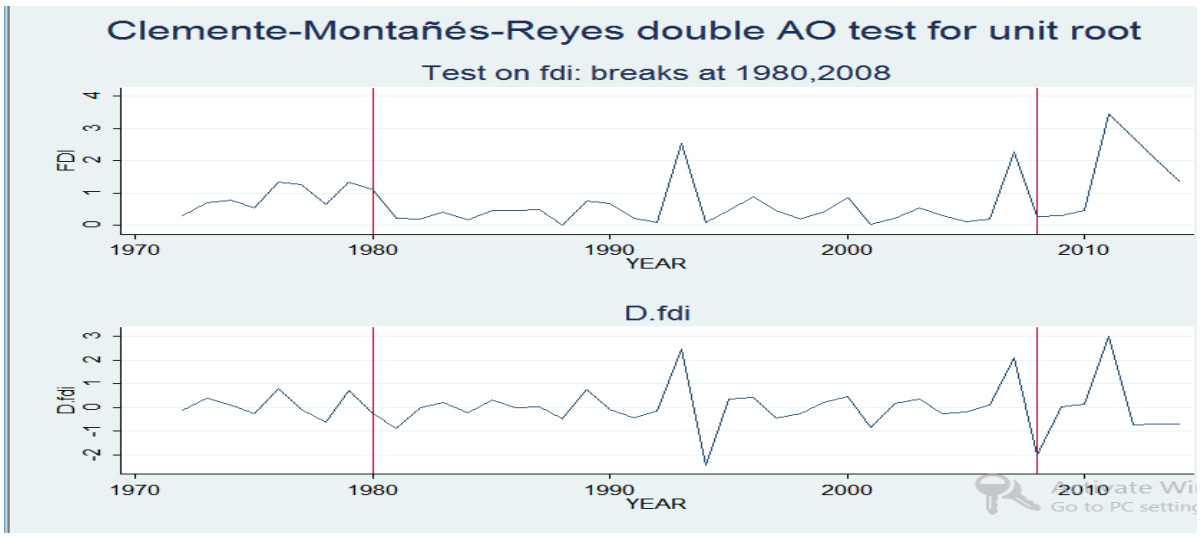

Figure A1.11: Clemente-Montañés -Reyes AO Test, FDI

DOI: 10.7176/JESD

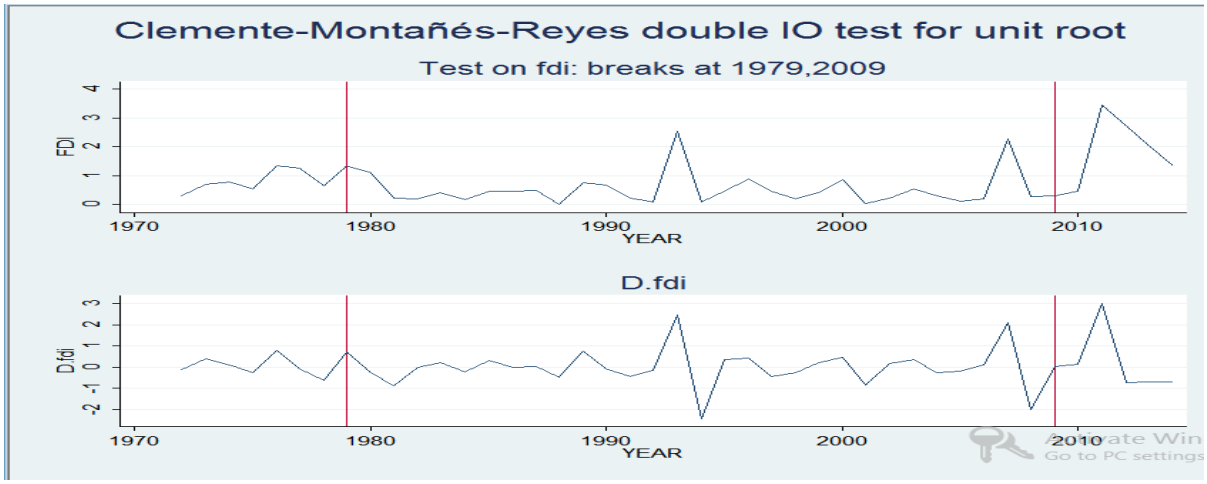

Figure A1.12: Clemente-Montañés -Reyes IO Test, FDI

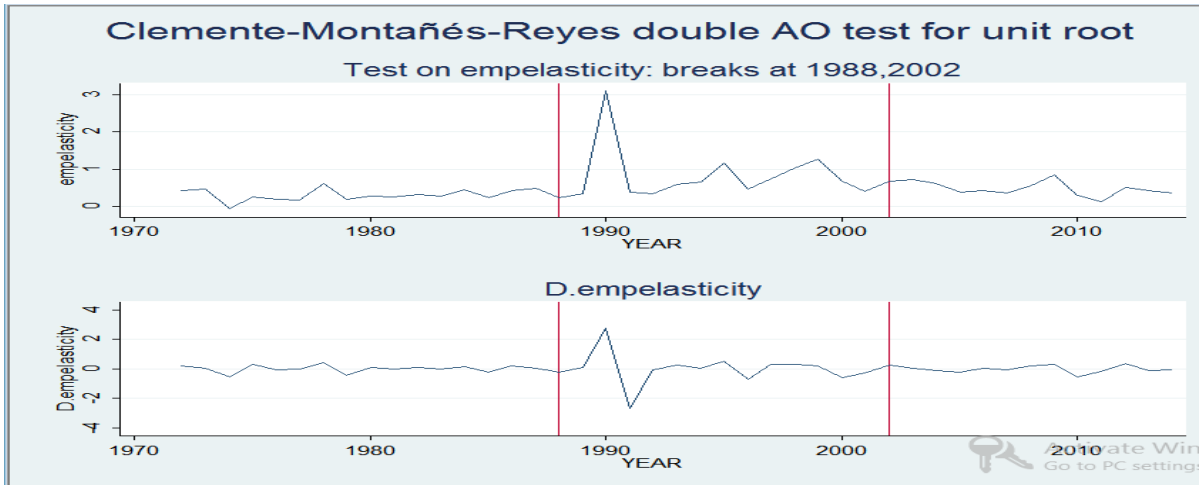

Figure A1.13: Clemente-Montañés -Reyes AO Test, Employment elasticity

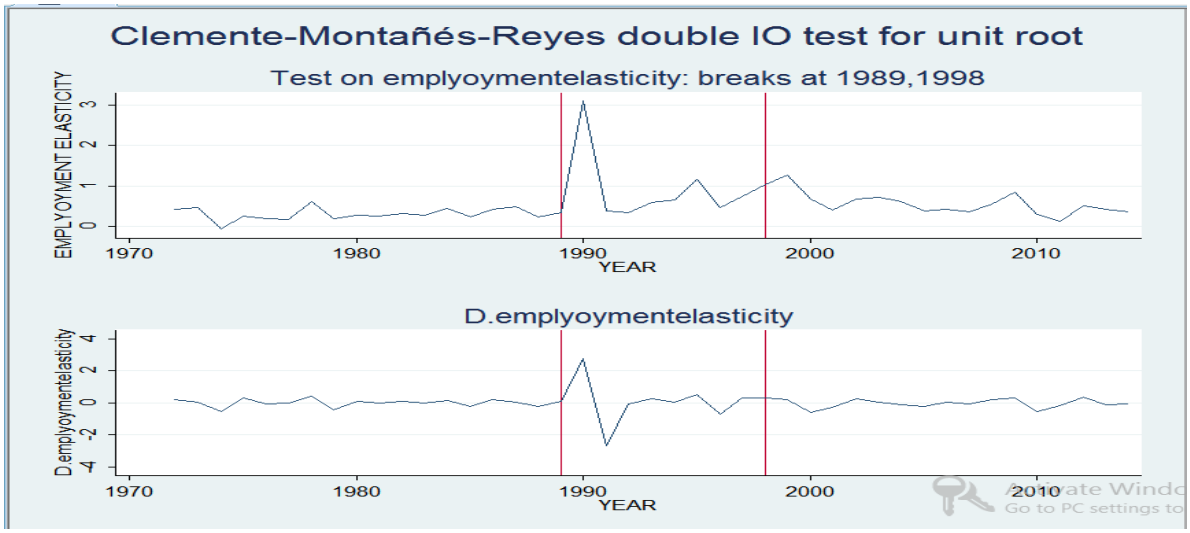

Figure A1.14: Clemente-Montañés -Reyes IO Test, Employment elasticity

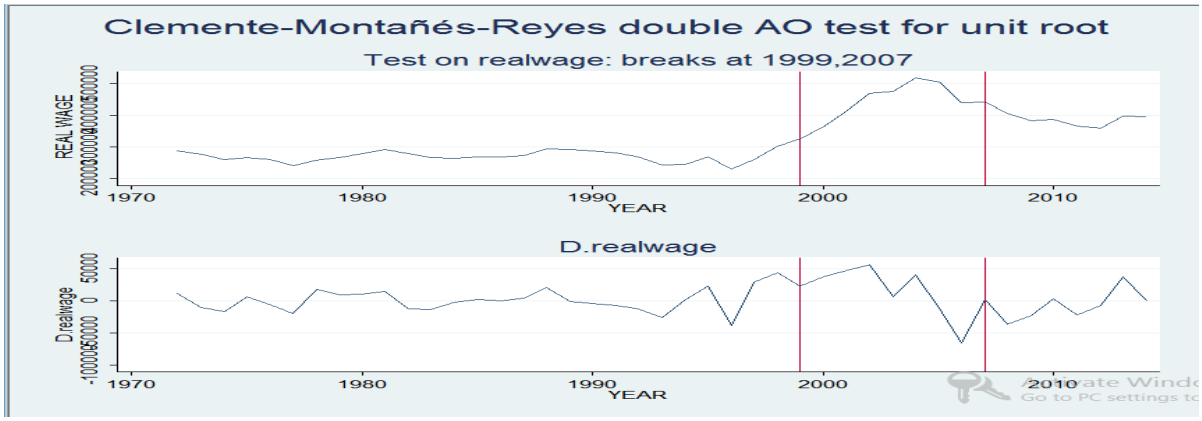

Figure A1.15: Clemente-Montañés -Reyes AO Test, average wage

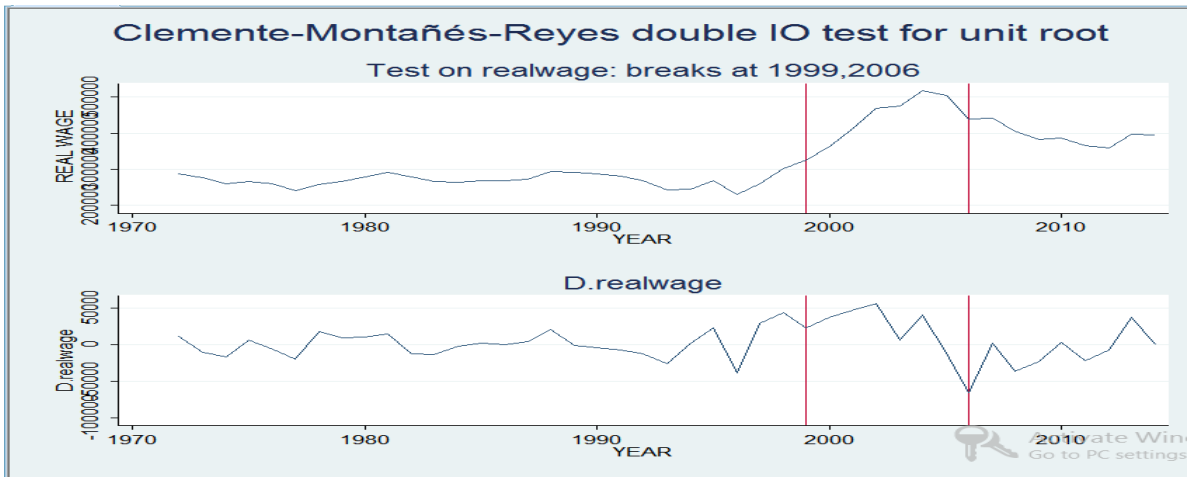

Figure A1.16: Clemente-Montañés -Reyes IO Test, average wage