















<b>LnEXD</b>	(1.472761)	(2.574466)	(4.247948)*	(4.191843)*	Stationary I(1)
	[0.5347]	[0.2934]	[0.0021]	[0.0118]	
<b>MacKinnon (1996) with constant, no trend,</b> ( ) <b>Indicates t-statistics with absolute value,</b> [ ] <b>Indicates p-value.</b>			Null Hypothesis: Each variable has a unit root at level and first difference.  * Indicates rejection of the null hypotheses at 1% and 5% level of significant in level and first difference.		

Source: e-views-v-10

**c. ARDL Bounds Test Result for Co-integration**

The estimation of equation tests for the existence of a long-run relationship among the variables by conducting an F-test for the joint significance of the coefficients of the lagged levels of the variables, against the alternative one.

The calculated F-statistics are reported in Table 3.3, when LnUNR variable is considered as a dependent variable in the ARDL regressions. From the above results, it is clear that there is a long run relationship amongst the variables. This implies that the null hypothesis of no co-integration among the variables is rejected.

Table3.3: ARDL Bound Testing to Co integration Results

Model		F-statistic		Inference									
<b>F<sub>LnUNR</sub>(LnUNR/LnRGDP, LnPOP, LnFDI, LnEXD, LnINFR)</b>		7.276699*		YES									
<b>Critical value bounds of the F-statistic and T-statistic: unrestricted intercept and no trend</b>													
		F-statistic			T-statistic								
<b>K=5</b>	SIGN-LEVEL	99%		95%		90%		99%		95%		90%	
		I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
		3.41	4.68	2.62	3.79	2.26	3.35	3.43	4.79	2.86	4.19	2.57	3.86
<b>Note: 1) K is the number of regressors 2) * denote statistically significance at one percent levels of significance.</b>													

Source: e-views-v-10

**d. Long run Relationship of Variables**

The long run impact of explanatory variables (LnRGDP, LnPOP, LnFDI, LnEXD, LnINFR)) on unemployment in an equation form as follows:

$$\text{LnUNR} = (-2.65) \text{LnRGDP} - (-4.00) \text{LnPOP} - (-2.22) \text{LnFDI} - (-3.65) \text{LnEXD} - (-2.21) \text{LnINFR}$$

Where ( ) are the t-values.

It can be understood as, other things being constant; a percentage change in real gross domestic product causes the long run unemployment reduction to change by about 44% and this is significant at five percent significance level. As increase in GDP is an indicator of economic growth, resulting in job creation in the country, reducing unemployment rate. This sign also strength the result of (Eita et al., 2010; Xuen et al., 2017; Muhammad et al., 2013). The result demonstrates that one percent increase in inflation rate leads to 62 % decrease in unemployment rate. This result supported the traditional Philip’s curve which indicates a trade-off between inflation and the level of unemployment. According to Philip (1958), “the low unemployment rates were associated with high inflation rate and that those periods with high unemployment were associated with low inflation rate”.

Result show that one percent increase in foreign direct investment leads to 43 % decrease in unemployment rate. As the FDI inflows increases in a country then



unemployment reduces because FDI provides new opportunities and thus helping in falling the unemployment. The study support the work of (Xuen et al., 2017). Population also has been significantly explaining long run unemployment in Ethiopia. It can be understood as, other things being constant; a percentage change in population growth causes the long run unemployment reduction to change by about 964% and this is significant at one percent significance level. The result of this study also consist from (Xuen et al., 2017. Suggesting with all other factors held constant, the results show that increase in the external debt by one percent leads to 161% decrease in unemployment and this is significant at one percent significance level. So, external debt is reducing unemployment in the long run. Moreover, it is consistent with the study of (Muhammad et al., 2013).

**e. Short Run Relationship of Variables**

Table.4.4: Estimated short-run coefficients using the ARDL approach

Dependent variable: D(UNR)				
Ecm(-1)	Coefficient	Std. Error	T-Statistic	Probability
	-1.266859	0.162937	-7.775125	0.0000
CON	29.08011	3.742687	7.769849	0.0000
Independent Variables	Short run elasticity's at various lag length			
	$y_{t-1}$	$y_{t-2}$	$y_{t-3}$	
<i>D(LNRGDP)</i>	-0.002869 (-0.036764) [0.9712]	0.345512 (4.296093) [0.0009]	0.096334 (2.223470) [0.0445]	
<i>D(LNINFR)</i>	-0.252623 (-5.068415) [0.0002]	0.365498 (5.060667) [0.0002]	0.160502 (2.208464) [0.0458]	
<i>D(LNFDI)</i>	0.234874 (3.464443) [0.0042]	0.706686 (5.315750) [0.0001]	0.396568 (3.843945) [0.0020]	
<i>D(LNEXD)</i>	-1.582973 (-4.512200) [0.0006]	0.659407 (2.251487) [0.0423]	1.127665 (3.488448) [0.0040]	
<b>R-Squared</b>	0.862768	MDV <sup>1</sup>	-0.071713	
<b>Adjusted R-Squared</b>	0.763656	S.D. DV <sup>2</sup>	0.808158	
<b>S.E. of Regression</b>	0.392887	AIC <sup>3</sup>	1.269049	
<b>Sum Squared RESID</b>	2.778489	SC <sup>4</sup>	1.910308	
<b>Log Likelihood</b>	-6.304777	HQC <sup>5</sup>	1.481608	
<b>F-Statistic</b>	8.704993	DW <sup>6</sup>	2.618272	

<sup>1</sup> Mean dependent variable

<sup>2</sup> Standard deviation dependent variable

<sup>3</sup> Akaike information criterion

<sup>4</sup> Schwarz criterion

<sup>5</sup> Hannan- Quinn criter.

<sup>6</sup> Durbin-Watson stat

<b>Prob(F-Statistic)</b>	0.000027
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Source: e-views-v-10

**Note:** Numbers without brackets are the short run elasticity of corresponding series; ( ) are t-values and; [ ] are the P-Values; and D, represents the Difference Term:  $y_{t-i}$ , represents the lag length.

At first lag of real gross domestic product has a negative and insignificant impact on unemployment level in Ethiopia. But, there is a statistically positive relationship between GDP and the unemployment rate at lag two and three. The results show that increase in the lag two and lag three of GDP by one percent leads to 34% and 9% increase in unemployment respectively, in the short run. This finding suggests that growth in Ethiopia is not pro-employment generation for short run. The difference in the nature of the growth achieved and its impact on unemployment is what makes economical policies in Ethiopia fail to reduce unemployment rates although growth rates were fairly high. The result support the work of Jonathan et al., 2015; Arslan and Zaman, 2014).

The result indicates that inflation is statistically significant under all specified lags. therefore, the coefficients of this value could also be explained in elasticity concept as if they have an impact on the current period. It is consistent with work of (Jonathan et al., 2015; Arslan and Zaman, 2014). The first lag, lag two and lag three periods, inflation has significant impact on the current period of unemployment. According to the above result, inflation of the lag two and lag three period shows a positive influence to the current period while the first lag has a negative sign. Hence by considering *ceteris paribus* when inflation at first lag increased by one percent, unemployment decreased by 25%. Concerning lag two and lag three, inflation rate have positive effect on unemployment. Result show that a 1% increase in lags two and lag three, unemployment level increased by 36% and 16%. Implying that inflation in the previous year is significant in affecting the unemployment rate positively.

The short run elasticity of foreign direct investment has positive effect on unemployment at all lag. Empirical research does not always confirm the inverse relationship of unemployment and foreign direct investment. Therefore, we can confidently assume that FDI show short run positive influence on the unemployment. The study result similar from Jaouadi (2014). The external debt was important in the short run. In the first lag of external debt, it has negative impact on unemployment. The result above shows that, first lag of EXD has a coefficient of -1.58. This indicates that there is immediate high response of unemployment rate to changes in external debt in the negative direction, and this is statistically significant at 5% level. The second and third lag of external debt has positive impact on unemployment in the short run. This may be due to poor management of external debt. At last, there is no short run relationship between unemployment and population.

The coefficient of error correction is significant at one percent significance level with negative sign. The coefficient of ECM is (-1.27) which shows high speed of adjustment from short run fluctuations to long run equilibrium approximately 127 percent of disequilibrium from the previous year's shock convergence back to the long run equilibrium in the current year. According to Kidanemarim (2014), Ahmed and Ambreen (2014), the highly significant error correction term further confirms the existence of a stable long-run relationship.

### **Conclusion and recommendation**

Unemployment is a socio-economic phenomenon, in which part of the labor force is not engaged in the production of goods and services. In actual economic life, unemployment appears as an excess of supply of labor over demand on it (Malika et al., 2017). The bounds testing approach demonstrates that there is a long run relationship between the unemployment rate and real gross domestic product, foreign direct investment, population

growth, inflation rate and external debt. This study performed diagnostic checks, the results show that there is no serial correlation, no conditional heteroscedasticity, and no specification error and there is a normal distribution in the ARDL model. The CUSUM and CUSUMSQ<sup>2</sup> statistics are well within the 5% critical bounds.

**At the bottom line the researcher recommend the following points;**

- ✓ the study suggests the government should increase the supply of external direct investment properly to take them more job searchers in short and long run, and create a conducive environment that entice many foreign direct investment.
- ✓ The study prove that economic growth is not good to capture more joblessness group, so the government should address the appropriateness of each economic sector for their attractiveness of unemployed peoples.
- ✓ Even if the result shows that external debt has a good contribution for unemployment reduction, but as much as possible the government should safe it self from external debt overhang.
- ✓ Due to trade off between inflation and unemployment, the government should increase aggregate supply.
- ✓ Creation of labor-intensive projects and consolidate the existing entrepreneurship activity with new entrepreneurial entrants so as to create more employment and absorb a large pool of unemployed population.

**Insight for researchers;**

Other interesting resercher can improve this study with many ways:-

- Increase the time period.
- Trend of each variable, their short and long run causality.
- Look the influence of political instability, corruption and climate change by considering them as dummy variable.
- Alternatively looking this study by including other African countries.

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