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# Investigating the Relationship between Youth Unemployment and Macroeconomic Policies in Pakistan

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**Abstract-** Pakistan is considered to be the fifth-largest young country in the world and the 28.45 percent population of the country comprises youth agedbetween 15 and 29 which is the officially defined bracket for youth in Pakistan. The most prominent challenge faced by the youth of Pakistan is difficulty to find a job and a long unemployment spell because of lack of field experience and skills due to the low quality of education and lack of required education. Therefore, the role of government has been increased intensively to impose such type of economic policies that may generate employment opportunities for them. Thus, the current research investigates the relationship between macroeconomic variables, which represent monetary, fiscal, and trade policy, and youth unemployment in Pakistan. In the light of the results of the unit root test, this research applied the ARDL bounds test which confirms that a long relationship exists between macroeconomic variables and youth unemployment. Moreover, trade liberalization, money supply, budget deficit, and investment are significant sources of reduction in youth unemployment in the short run. But in the long run, only investment and budget deficit have a significant role in the reduction of youth unemployment for the case of Pakistan. These results provide important implications to the policymakers of Pakistan for short-run and long-run policymaking.

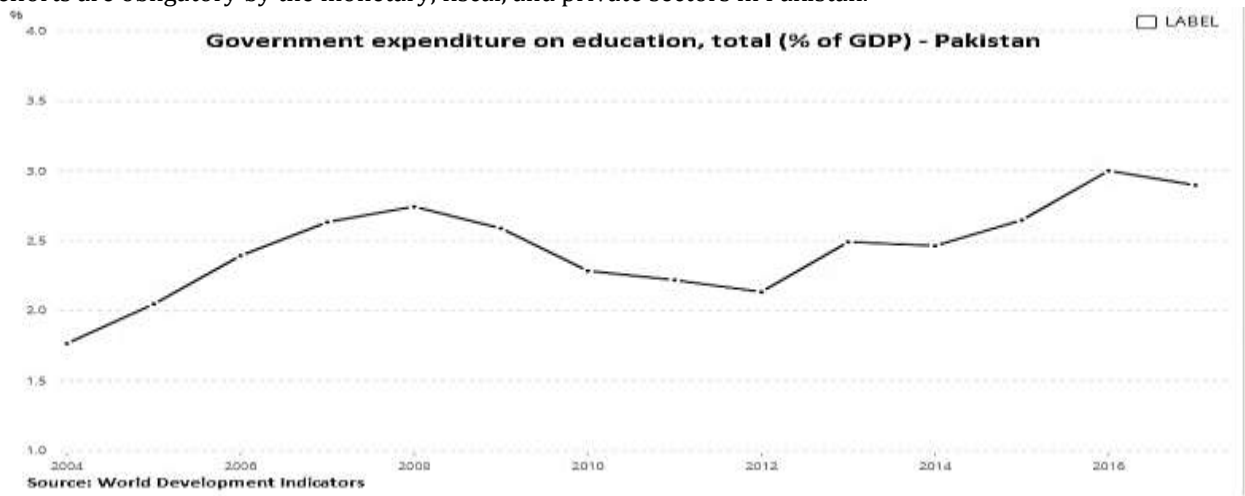
**Keywords:Youth Unemployment, Macroeconomic, Policies, Pakistan**

## I. INTRODUCTION

In the 1930s, when people were walking impotently in the streets of the USA in search of jobs, the policymakers and economists were working on how to resolve the unemployment problem. Since then, the 1930's great depression episode remained a live issue throughout history as an 'ex-posterior' belief for macroeconomists. This issue resuscitates globally colliding with whether monetary and fiscal policies can achieve the employment level which is considered as a welfare objective. Researchers call upon unemployment with an 'evil' a metaphor, which conjectures a cost borne by a typical economy. This cost is described in two ways: the first is the loss of output which is estimated through Okun's Law, while the second one is the psychological cost faced by unemployed workers and their families (Bernanke, 2012; Lorenzini and Giugni, 2010). Macroeconomics defines an unemployment rate as a fraction of the labor force searching for work for four weeks and unable to get a job.

The factors that determine the unemployment in short-run are still controversial. Classical and Keynesians, both schools of thought agree that during the short run actual rate of unemployment can deviate from the long-run natural rate, but the justification and causes provided by both groups are different. The RBC theory explains that productivity shocks and instabilities in macroeconomic variables are responsible for the recessions. These shocks also create a mismatch between the workers' skills and the requirements of employers. Due to adverse shocks, the degree of mismatch may increase among some industries and in different regions of a country (Lillien,1982; Devis, 1992). On the other hand, Keynesians favor rigidity in the labor market. Although they agree with the mismatching theory, however, they do not consider it a whole story as a reason for unemployment. The main cause of unemployment, according to them is the prevalence of high wage rates in the labor market due to the "efficiency wage model" and "shrinking model". Firms pay high wage rates to their workers to make them feel well and encourage them to work efficiently and with more diligence (Akerloff, 1982, 1984). In contrast, the workers who are paid lesser wages do not work hard because of the lack of fear of job termination. Therefore, the firms also pay them high wage rates eventually increasing their performance and efficiency (Shapiro and Stiglits, 1984). Hence, the classical economists call for removing market rigidities and recommend governments to adopt business-friendly policies to boost economic activities and thus reducing unemployment. Whereas, Keynesians advocate for increasing government expenditures to boost up

aggregate demand and thus increase the level of employment and output in the economy.One of the studies conducted by Shimer (1998) and Shaikh, Riaz, and Ahmad (2020)concluded that an increase in the share of youth in a total population of a country increases the unemployment rate. The adverse shocks affectthe youth populationmore severely than othersbecausethe youth population does not have the requiredlabor skills and experience because of lack of required education and low quality of education as well. As much as a country has a large portion of youth in its total population, it has to face severe unemployment. Similarly, Rehman et al. (2016) report that high youth unemployment is the consequence of a lack of government interest in the education sector and a small amount of funding provided by the government.The percentage of public expenditures in education is not favourable which can be analysed in the below graph provided by World Bank. Furthermore, there is role of institutional and political corruption in Pakistan which creates hindrances in disbursement of allocated education funds (Ali *et al.* 2019). Hence, countries should work on policies to control the population, provision of market demanded skills, and give them some job experience before they enter the job market. But these solutionsinvolve a lot of public expenditures and private investment as well. In other words, a lot of efforts are obligatory by the monetary, fiscal, and private sectors in Pakistan.




The above findings provoke us to investigate the relationship between different economic policies at the macro level and youth unemployment in Pakistan. Pakistan is a developing country of around 216.6 million people of which28.45% are between 15-29 years old[1]. Due to this distribution of age, the dependency ratio in Pakistan is 65.3%; whereas, the youth dependency ratio is 57.9% which is a significant number[2]. Furthermore, the youth literacy rate in Pakistan is almost 70% but the definition of literacy rate is too much narrow because in Pakistan a person is literate who can read and write his/her name. Therefore, it is important to study the nexus between youth unemployment and macroeconomic policies in Pakistan.The significance of this study in literature is twofold. First, this is the only study that uses an official definition of youth to study the relationship. As per the official definition of the government of Pakistan, a person of age between 15 – 29 years is counted in youth. To measure youth unemployment, we used the data from various waves of labor force surveys. This work is explained in more detail in the relevant section. The second significance of the study is that to be best of our knowledge, this is the first study on the nexus of macroeconomic policies and youth unemployment in Pakistan. Therefore, this study will give useful information to economists and more importantly to policymakers on the impact of different macroeconomic policies on youth unemployment in Pakistan.The rest of the study is organized in a way that the next section contains the literature review of previous studies. Then in the next section, we discuss the data and estimation methodology. Then in the last two sections, the study reports its findings and conclusion respectively.

## II. LITERATURE REVIEW

Unemployment is a critical and persistent problem for the Pakistani economy. It is one of the many challenges faced by the government, the resolution of which requires structural changes and reforms of a far-reaching extent. Youth employment, in particular, is a rising challenge as Pakistan is a country that has a significant and rising youth population. It is a valuable resource if appropriately channelized can boost

productivity performance and the growth rate of the economy. A lot of research has been conducted around different dimensions of unemployment in Pakistan. Attempts have been made to study the determinants of unemployment, youth unemployment and have focused on the causes of unemployment. This research is unique as it attempts to empirically compute youth unemployment by using values of labor force survey in the light of the definition of youth provided by the government of Pakistan and thenfind how this challenge can be tackled via macroeconomic policies.

The youth accounts for a significant segment of the Pakistani population. According to research by Nayab (2008) and Siyal., et al (2016), developing countries such as Pakistan arebestowed with demographic dividends which can be utilized to bring about economic development if channelized effectively using effective macroeconomic policies. Research by Arif and Chaudhary (2008) also pointed out the demographic transition that has taken place in the country. The share of the working-age population is high. They have called it the bonus phase which is expected to last for about two decades after which the old age population will start to rise. The youth is a valuable resource and the placement of the youth in productive employment is a crucial activity for the government. The provision of employment opportunities and the development of human capital is a critical task that faces the government. Research by Hussain et al (2010) explains the important role of growth in generating employment. Their research reveals a strong relationship between growth, unemployment, the openness of trade, and human development. According to them, Pakistan has been a case of growth without development. Growth policies have not been able to reduce unemployment because of very poor social indicators and high levels of poverty and inequality. The macroeconomic policies should incorporate a focus on accelerated GDP growth, investment, and export orientation. This should be accompanied by the development of infrastructure and human capital and labor-intensive policies in urban and rural areas.

Furthermore, the youth represents a significant proportion of the population in Pakistan in both urban and rural areas. They differ in characteristics, cultural context, and mind-set. Therefore, the macroeconomic policies that must be implemented require to be tailored according to the circumstances in each region as there is considerable variation among the youth population. The labor force participation rate is only 47.6 percent which means that 52.4 percent of the young population is not part of the labor force. Those who are part of the labor force have a high unemployment rate of 22 percent which is higher than adult unemployment. Only 27 percent of the young people are enrolled as students and 30.5 percent are neither in the labor force nor enrolled as students. Therefore, considering the extent of diversity in the youth the macroeconomic policies must be tailored to adapt to the situation and take advantage of this demographic dividend.

Likely, Research by Ahmad and Azim (2010) revealed that youth unemployment is highest in Baluchistan as compared to the other provinces however the proportion of youth inactive is lower as compared to other provinces indicating the willingness of the youth to work and also their inability to find work. Their research also finds higher levels of unemployment among the youth in urban areas as compared to rural areas and the female population face higher unemployment as compared to males. Another interesting finding of their research was that youth with educated parents had a higher unemployment rate which points that when the parents are educated and have jobs the youth have a greater ability to pick and choose among jobs. Their research provides evidence that the youth face a greater probability of unemployment in the early phases of their career as opposed to the latter. These results were consistent with the work of Arif et al (2002) and Kingdom and Soderbon (2008) which also highlight that as the age progresses the unemployment ratio decreases and participation in economic activities increases.

Furthermore, governmentsall over the world in both developing and developing markets take special initiatives to generate employment for the youth. Because youth unemployment can have damaging societal impacts if the energy of the youth is not channelized to proper measure. Research by Khurram et al (2013) and Ahmad and Bin Mohammad (2019); (Ahmad, Bin Mohammad, & Nordin, 2019)explored that the effect of management could help to increase the organizational performance. Youth unemployment if not addressed is, therefore, a critical problem. Research by Gocer and Erdal (2015) also highlighted the social and political consequences of youth unemployment. A high level of youth unemployment does not only have a psychological impact on the life of young people but it also creates a shortfall in GDP. Fallahi et al (2012) examined the relationship between unemployment and burglary and theft and found the increase in unemployment significantly and positively affected these kinds of crimes. This work is also substantiated by the previous research of Baron (2008) which found that a one percent increase in unemployment increased participation in criminal activities by 0.1.41 percent.

However, macroeconomic policies aimed at promoting youth employment can only be beneficial if they consider the younger population to be an asset to society. The differences in the educational and social setting in the different regions of the country should be taken into account for that purpose and policies should be designed accordingly. Rather than aiming at providing government jobs, the policies should

focus on the generation of self-employment. Incentives and tax benefits for self-employment schemes can encourage the youth to start their ventures.

In this context, it is important to understand factors that are responsible for unemployment in general and youth unemployment in particular. One of the major characteristics that distinguish a developed country from a developing one is the high rate of unemployment. Unemployment can be defined as the phase in an individual's life when a person is actively seeking a job and is prepared to work at the wage rate existing in the competitive market. The high rate of population growth in developing economies contributes to the high levels of unemployment. The creation of new jobs and business and industrial sectors that can absorb new employees happens at a slow pace thus creating a backlog of unemployment. More and more young people enter the unemployed category and their absorption and assimilation into the labor market is very slow. Various studies have been conducted to identify the internal and external factors that determine unemployment. Kalim (2003) identified population and GDP as major determinants of unemployment. Akhtar and Shahnaz (2005) investigated the determinants of youth unemployment in particular and found that GDP growth and growth rate of the service sector and private investment are particularly important in generating youth employment.

Similarly, Qayyum (2007) specifically investigated the causes of youth unemployment in Pakistan. He identified the prevalence of youth unemployment to be associated with the absence of proper training and vocational institutions as well as the lack/absence of counseling initiatives that direct the youth towards appropriate career paths. Moreover, his research identified that fluctuations in GDP over the years have contributed to rising unemployment as put forward by Okun's law that a 1 percent increase in unemployment occurs for every 2 percent decrease in GDP.

Moreover, macroeconomic policies involve aspects of the fiscal policy, monetary policy, trade policy, and policies targeted at increasing investment. Research by Maqbool et al (2013) examines the impact of GDP, inflation, and foreign direct investment and its relationship with unemployment. Their results reveal these items are significant determinants of unemployment in the short run as well as the long run. GDP, inflation, and foreign direct investment are factors that are directly and indirectly affected by fiscal monetary, and trade policy. This is further validated by the research by Cheema and Atta (2014) that unemployment decreases with increases in fixed investment and an increase in openness of trade. It increases as the output gap and economic uncertainty increases and productivity decreases. Their research recommends that government policies should be aimed at increasing GDP. Devaluation strategies along with the easing of trade restrictions will pave way for greater trade and the government should focus on increasing its investment as well as stimulate investment for the private sector. As highlighted before these actions on the part of the government require calculated changes and adjustment in the macroeconomic policies.

Nonetheless, Khumalo and Eita (2015) investigated the determinant of unemployment in Swaziland South Africa. Their research also highlights the importance of macroeconomic variables such as GDP inflation and Government spending in controlling unemployment levels. They highlight that in most cases it is believed that expansionary fiscal policy is seen to generate employment. However, this was not the case in Swaziland. Increased government spending in their case seemed to increase unemployment. The research reveals that this result was because the increased government spending in Swaziland was not focused on activities that create employment. This research leads to the thought process that further supports the objective of the current research which is to determine the relationship between macroeconomic policies and youth unemployment in particular. Similarly, research by Rizvi and Nishat (2009) and Shaikh et al. (2020) on employment opportunities in Pakistan, India, and China reveals that increases in foreign direct investment do not directly bring a rise in employment opportunities. The policies aimed at increasing foreign direct investment must be supported by other initiatives and employment-enhancing activities. This again gives way to the idea that macroeconomic policies have to be carefully designed and calculated to achieve generation in youth employment as an objective.

The current research contributes manifold to existing literature and has important implications for academicians and practitioners. It touches upon a unique dimension as previous researches have focused on determinants of unemployment and youth unemployment in general. However, the current research computes youth unemployment by using historical data of labor force surveys covering the period from 1991 to 2018. Furthermore, the current research establishes the important connection between macroeconomic policies and youth unemployment in particular.

## III. THEORETICAL MODEL, DATA AND METHODOLOGY

In this section, we first present the theoretical model, then data and in the end, we shall discuss the econometric methodology used for estimation.

**Theoretical Model**

Unemployment is one of the severe problems that developing economies are facing at present. The problem gets severe in recession times. Different schools of economics disagree on the causes of unemployment as discussed briefly in the introduction section. Based on that debate, different economists suggest different policies to resolve this issue.Classical economists are of the view that government should not engage itself in economic matters actively. The role of government is limited to the creation of facilitating environment for the businesses, reduce the regulations and liberalize the trade so that investments may be encouraged that increase the aggregate demand and thus create job opportunities to decrease the unemployment level.Keynesians on the other hand, advocate for the government's role to restore the level of aggregate demand. They are of the view that in recession times, the government should increase expenditures which will increase aggregate demand and people's income. With more income, private spending will increase which will create more demand for the products. This will induce firms to expand their production activities and thus will create jobs.Monetarists, on the other hand, suggestions for increasing the money supply to deal with the recession by increasing the aggregate demand in the economy. An increase in the money supply will lower the interest rate and encourage private consumption and investment in the economy. This will eventually increase the labour demand and will reduce the level of unemployment in the economy.Based on these thoughts, this study aims to analyse the relationship between youth unemployment and macroeconomic policies. Analysing youth unemployment is important because the share of the young population in the total population is very significant in Pakistan. Moreover, young people are mostly fresh graduates with no or very low level of job experience. On the other hand, since they are recently qualified, they are trained on the recent skills and hence they are less likely to be affected by structural changes. Therefore, analyzing youth unemployment is very important.

The model used in the study is

$$YUnemp = \alpha_0 + \alpha_1 InvGDP + \alpha_2 M2GDP + \alpha_3 TVolGDP + \alpha_4 BDGDP \qquad (1)$$

whereYUnemp is youth unemployment, InvGDP is the investment to GDP ratio, M2GDP is money supply (M2) to GDP ratio, TVolGDP is trade volume to GDP ratio and BDGDP is the budget deficit to GDP ratio. These variables are used to gauge the impact of investment supporting the environment, monetary policy, trade liberalization policy, and fiscal policy. The detail of these variables is given in the upcoming subsection.

**Data**

We used the government of Pakistan's official definition of youth to calculate the youth unemployment rate. Officially, a person between the agesof 15 – 29 is counted as part of the youth population. Unfortunately, the data on this is not readily available. We used available waves of labour force surveys to calculate the youth unemployment rate. We first filtered the observation that falls in this age bracket. Then we calculated the number falling in the labour force survey and those who are unemployed. Based on these numbers, we calculated the youth unemployment rate. For the missing years, we used the moving average method to calculate missing data. The details of waves are given in Table 1A in the appendix.Data on investment and trade volume is taken from WDI. Investment is the sum of changes in inventories and gross capital formation whereas the trade volume is the sum of total imports and exports. The data on money supply (M2) is taken from the State Bank of Pakistan and the data on-budget deficit is taken from various issues of the Economic Survey of Pakistan. All the data are in local currency units. All the values are divided by the real GDP of that year but not converted in the percentage however, the unemployment rate is in percentage terms. Therefore, for interpretation, one unit change in an independent variable will represent the percentage points change in youth unemployment.

**Econometric Methodology**

As the time series variables often suffer from the non-stationarity issue, their relationship can be tested by a cointegration test. Traditional approaches to test cointegration are limited in scope as the Engle-Granger (EG) approach is used for two-variable whereas Johansen and Juselius (JJ) technique is used for more than two variables. However, the pre-condition for both EG and JJ approaches is that all the variables in the model should be I(1). Whereas, the ARDL / Bounds Testing methodology presented byPesaran and Shin (1999).

The ARDL cointegration approach involved two steps. In the first step, the existence of cointegration between the variables is tested using the Bounds test. If there is cointegration among the variables, the long-run coefficients are estimated using OLS and short-run coefficients are estimated using the error correlation model (ECM). ARDL model for the determination of the order of integration in equation (1) can be represented as:

$$\Delta y_t = \beta_0 + \sum_{i=1}^{p} \delta_i \Delta y_{t-i} + \sum_{i=0}^{q} \varphi_i' \Delta x_{t-i} + \mu y_{t-1} + \omega' x_{t-1} + \varepsilon_t \quad (2)$$

Where x is a vector of independent variables,$\mu$ and$\omega$ are the long-run coefficients, while$\delta$ and$\varphi$ represent the short-run dynamic structure of$\Delta y_{t-i}$and$\Delta x_{t-i}$respectively. The ranges of summation in (2) are from 1 to, 0 to q respectively. To select the appropriate values for the maximum lags, p, and q, the maximum lags are determined by the AIC or SBC criterion.In the first step, F-test is performed to test the null hypothesis of $H_0: \pi = \theta = 0$. The calculated value of the F-statistic is compared with the lower and upper bound critical values reported by Pesaran et al. (2001). If the F-statistic falls below the lower bound value, we conclude that there is no cointegration among the variables.If the calculated statistic is higher than the upper bound value, we conclude that there is a long-run relationship between the variables. However, if the F-statistic falls between the lower and upper bounds, the test is inconclusive.If there is cointegration among the variables, we can extract the long-run effects from the unrestricted ECM. Looking back at equation (2), and noting that at long-run equilibrium, $\Delta y_t = \Delta x_t = 0$, we see that the long-run coefficients are $\gamma_0 = \beta_0/\mu$and $\theta = \omega/\mu$. The error correction model (ECM) is estimated for short-run coefficients. The ECM indicates the speed of adjustment back to the long-run equilibrium after a short-run disturbance.To determine the goodness of fit of the ARDL model, the diagnostic test and the stability test are conducted.

## IV. Results and Discussion

In this section, we present the results of estimating model presented in equation (1) by the ARDL model as given in equation (2).

**Descriptive Statistics**

The descriptive statistics presented in table 1 show that youth unemployment has been very high in Pakistan. In the sample, the minimum value is 5.83% while the maximum is 20.90% which is very high. The standard deviation value shows that volatility in the data is high. Among other variables, the money supply (M2) to GDP and trade volume to GDP have higher mean values than the rest of the variables, whereas the volatility is lowest in the investment to GDP ratio. The skewness value shows that investment to GDP ratio and trade volume to GDP is family normally distributed whereas youth unemployment, money supply to GDP, and budget deficit to GDP are moderately skewed to the positive side. Kurtosis values are lower than 3 for all variables which shows that data are light-tailed and lack outliers. Jarque-Bera statistics show that all the variables are normally distributed at 5% level of significance.

**Table 1: Descriptive Statistics**

| | YUnem | InvGDP | M2GDP | TVolGDP | BDGDP |
|---|---|---|---|---|---|
| **Mean** | 11.7574 | 0.2015 | 0.4323 | 0.3326 | 0.0689 |
| **Maximum** | 20.9036 | 0.2400 | 1.0900 | 0.3875 | 0.18 |
| **Minimum** | 5.8282 | 0.1600 | 0.0900 | 0.2531 | 0.02 |
| **Standard Dev** | 4.2479 | 0.0249 | 0.3041 | 0.0333 | 0.0561 |
| **Skewness** | 0.6732 | -0.0837 | 0.7988 | -0.417 | 0.8244 |
| **Kurtosis** | 2.4849 | 1.8710 | 2.3754 | 2.7961 | 2.148 |
| **Jarque-Bera** | 2.2526 | 1.4112 | 3.1875 | 0.8000 | 4.0185 |
| **Probability** | 0.3244 | 0.4938 | 0.2032 | 0.6703 | 0.0744 |

Notes: Selected descriptive statistics are calculated by the authors.

**Unit Root Test Results**

The first step in checking for cointegration using the ARDL test is to make sure the variables in the data are either I(0) or I(1) or a mixture of the two. For this purpose, we applied the Augmented Dickey-Fuller (ADF) test. The results given in table 2 show that at level, we are unable to reject the null hypothesis of the ADF test of the presence of unit root, except for the investment to GDP (InvGDP) variable. However, the null hypothesis is rejected at the first difference for all the variables. This shows that there is no I(2)

variable in the data and hence we can proceed to apply the Bound Test of ARDL to check for the presence of cointegration among the variables.

**Table 2: Unit Root Test Results**

| Variable Name | t-Statistics (At Level) | t-Statistics (At 1st Diff) | Decision |
|---|---|---|---|
| **Yunem** | -2.1669 | -7.8084*** | I(1) |
| **InvGDP** | -3.3897* | -5.0451*** | I(0) |
| **M2GDP** | 0.1618 | -3.2908* | I(1) |
| **TVolGDP** | -1.5539 | -5.8225*** | I(1) |
| **BDGDP** | -0.2581 | -4.6174*** | I(1) |

Notes: Table shows ADF test results. *, ** and *** respectively show significant values at 10%, 5% and 1% respectively.

**ARDL Bound Test Results**

As there is no I(2) variable in the data, so we can proceed for checking cointegration among the variables. The presence of cointegration is checked by Bound Test. For the existence of a meaningful relationship between the variables in long run, the F-statistics should be higher than the upper bound value given in Peasran (2001). The results presented in table 3, show that F-statistics is higher than the upper bound value I(1) at a 5% level of significance. Therefore, we conclude that the variables move together in the long run.

**Table 3: Bound Test Results**

| | Statistic | Bond Values at 10% I(0) I(1) | Bond Values at 5% I(0) I(1) | Decision |
|---|---|---|---|---|
| **F-Statistic** | 4.3334** | 2.2 3.09 | 2.56 3.49 | Cointegration at 5% |

*Note: ** show significant results at a 5% level of significance.*

**Short Run and Long Run Results and Discussion**

Table 4 gives the short-run and long-run results of the model estimated using the ARDL approach. The short-run results show that an increase in trade volume to GDP ratio (TVolGDP) of 1 unit decreases youth unemployment by 48.04 percentage points. This means that youth unemployment in the short-run can be controlled by liberalizing the trade and opting for more open economic policies. However, in the long run, the effects of such policies on youth unemployment are insignificant. This may be because by opening the trade, our dependency on imported goods, especially in consumer goods, electronics, toys, and kitchen items have increased. A flow of cheap material produced because of low energy prices, cheap labour, and higher productivity by China and other countries have taken over our markets and our local industry could not compete with it. As a result, many inefficient firms faced shut down which contributed to unemployment.The money supply to GDP ratio also decreases unemployment in the short run. A 1 unit increase in money supply to GDP ratio (M2GDP) decrease youth unemployment by 87.81 percentage points in the same period and by 137.44 percentage points with a lag of one period. However, the effects are insignificant in the long run. This shows that expansionary monetary policy can be used to address the problem of youth unemployment in the short run. With more supply of money, the interest rate decreases, and together these two, push the aggregate demand which results in boosting economic activities and creating more jobs. This results in reducing unemployment. However, such policies are ineffective in long run as with consistent policies, people's expectations are formed in the same line. Therefore, in the long run, the effects of such policies die out.

The investment to GDP ratio (InvGDP) also increases the unemployment in the short-run but in the long run,a 1 unit increase in investment to GDP ratio decreases the youth unemployment by 163.26 percentage points. This is a notable decrease and it shows that to increase youth employment government should make business-friendly policies, should simplify the registration, regulatory, and taxation processes, and should make policies to increase the availability of finance for the businesses. Pakistan has been focusing on that. The government has already taken fundamental steps in this regard. The taxation system is being upgraded and automated,the registration process has been improved. As a result of these steps, Pakistan's ranking in ease of doing business index has improved significantly as can be seen in the current report by the World Bank. The government is not borrowing from the central bank since the start of this financial year, which will result in decreasing the interest rate. All this is expected to result in improving the business environment in Pakistan.

The budget deficit to GDP ratio (BDGDP) is another important variable that gives us a view of how the fiscal policy can affect youth unemployment. The estimates show that in the long run, budget deficit and

unemployment are inversely related. An increase in the budget deficit to GDP ratio of 1 unit will result in decreasing youth unemployment by 136.76 percentage points in the long run.This means that government expenditures in Pakistan are creating jobs for the youth. Pakistan has been facing the issue of a low tax to GDP ratio compared to regional countries. Pakistan's tax to GDP ratio has been moving around 10% in the last decade, showing no significant improvement whereas Bhutan, India, and Nepal all improved it from around 8% to 12%, 11%, and 22% respectively in the last same period[3]. To continue financing government expenditures for job creation, the government will have to address the issue of low tax collection and will have to divert its expenditures from non-development expenditures to development expenditures. Otherwise, it will become very difficult for the government to continue financing the job creation for youth. The error correction term is also significant, and its sign is also in line with the theory. The results are presented in the table below.

**Table 4: ARDL Estimation Results**

| Variable | Coefficient | Variable | Coefficient |
|---|---|---|---|
| **ΔTVolGDP** | -48.0410**<br>(17.68082) | **TVolGDP** | 20.3245<br>(37.6467) |
| **ΔM2GDP** | -87.8148***<br>(16.8864) | **M2GDP** | 13.2611<br>(8.64499) |
| **ΔM2GDP(-1)** | -137.4427***<br>(21.6837) | **INVGDP** | -163.2631**<br>(70.4168) |
| **ΔInvGDP** | 76.9016*<br>(40.0582) | **BDGDP** | -136.7603**<br>(52.8226) |
| **ΔInvGDP(-1)** | 133.094***<br>(39.5567) | **C** | 39.4332**<br>(16.974) |
| **ΔBDGDP** | 44.3423**<br>(19.2065) | | |
| **ΔBDGDP(-1)** | 81.0682***<br>(24.2319) | | |
| **ECM** | -0.7086***<br>(0.1181) | | |

Notes: Short-run estimates are given in the first two while the long-run estimates are given in the last two columns. Lag length is specified as per the SIC criterion. *, ** and *** shows significant values at 10%, 5% and 1% level respectively.

**Diagnostic Tests**

After estimating the results, we applied the LM test, Breusch-Pegan-Godfrey and Ramsey Reset tests to check for possible issues of autocorrelation, heteroskedasticity, and misspecification of the model. We are unable to reject the null hypothesis of all the tests which shows that there is no such issue in the model.The value of R-square shows that almost 75% of variations in the dependent variable are captured by the model. The CUSUM and CUSUM of Squares are also stable. The results are given in Table 5 below and the graphs are presented in Figure 1.

**Diagnostic Tests**

| Diagnostics | Statistic | Diagnostics | Statistic |
|---|---|---|---|
| **LM Test** | 2.232<br>[.128] | **R – square** | .75 |
| **Breusch-Pagan-Godfrey (PBG) Test** | 1.487<br>[.2627] | **Adj. R – square** | .67 |
| **Ramsey RESET Test** | .3723<br>[.716] | **CUSUM CUSUM SQ** | Stable |

Note: Probability values are given in square brackets.

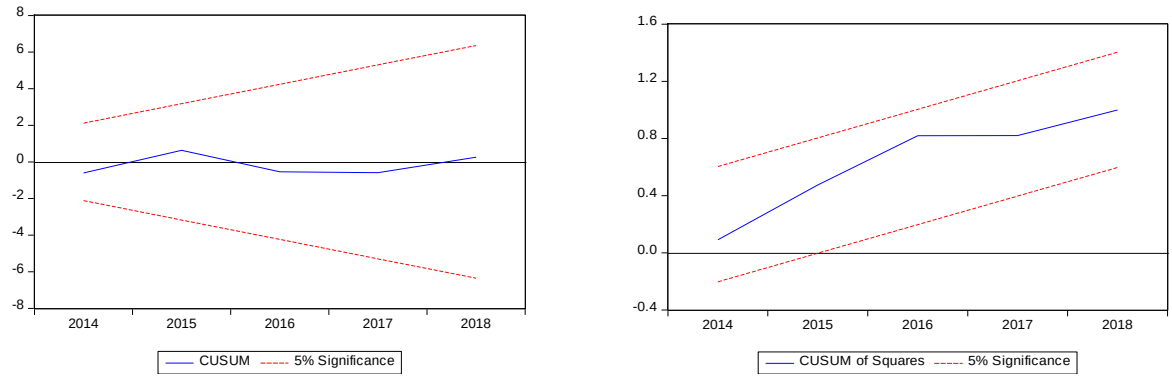



**Figure 1:** *Graphs of CUSUM and CUSUM of Square.*

## V. CONCLUSION

Although unemployment is a phenomenon that adversely affects the economies of both developed and developing countries, it becomes more problematic for those developing economies that have more portion of youthin their population. Pakistan is a developing country with a 216.6 million population. Furthermore, 28% of its population consists of youth which is the most vulnerable segment of the society because any undesirable change in economic activity creates severe threats to chances of getting a job. The reasons behind it are; the lack of required education, skills, and experience because the current education system of Pakistan does not consist of the sufficient duration of practical fieldwork as a requirement of getting a degree. Consequently, the need for government role has been intensified to impose such type of economic policies that can help them out to get rid of this problem. Therefore, the current research investigates the relationship between the macroeconomic environment and youth unemployment in Pakistan by using data from 1991 to 2018. Moreover, the variable of youth unemployment is computed by using the different waves of labor force survey of Pakistan. In the light of the unit root test, the current study applied the ARDL model to find the short-run and long-run relationship between macroeconomic variables and youth unemployment. According to the results of the Bound test, a long-run relationship exists between macroeconomic variables and youth unemployment. Furthermore, investment and budget deficit are significant sources of reduction in youth unemployment not only in the short run but also in the long run. Unlikely, trade openness and money supply reduce youth unemployment only in the short run for the case of Pakistan.

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