Influencing Factors of Poverty in Pakistan: Time Series Analysis

Rizwan Akhtar[1,2]*, Hongman Liu[3], Amjad Ali[4]

[1]MS Student, China Agricultural University, Beijing, China, [2]Lecturer, Department of Economics, Karakoram International University, Gilgit-Baltistan, Pakistan, [3]College of Economics and Management, China Agricultural University, Beijing, China, [4]Department of Economics, Karakoram International University, Gilgit-Baltistan, Pakistan. *Email: Rizkiu_economics@yahoo.com

ABSTRACT

Poverty is one of the emerging problems being discussed and debated in various developed and developing countries including Pakistan. This study investigates influencing factors of poverty in Pakistan and discusses the theoretical linkages between poverty and its main macroeconomic variables. For this Johansen co-integration technique has been applied with multi diagnostics tests. The macroeconomic variables taken in this study are agricultural ratio to gross domestic product (GDP), ratio of Foreign Direct Investment (FDI) to GDP, ratio of the primary education, ratio of the domestic credit to private sector and military expenditure as percentage of GDP. Results of the study show that all these variables have significant effect on poverty. In the case of agricultural ratio to GDP, an increase in agricultural output leads to decrease poverty. Education enrollment also has significant negative impact on poverty in long run. It helps in reducing poverty and improving the socio economic status of both the individuals as well as the society. Domestic credit has also significant negative impact on poverty but military expenditure has significant positive impact on poverty in Pakistan.

Keywords: Headcount Index, Foreign Direct Investment, Economic Growth, Pakistan
JEL Classifications: C50, I32, E60, E62

1. INTRODUCTION

Poverty is one of the emerging problem being discussed and debated in various developed and developing countries including Pakistan. It impedes economic growth and other social and economic development that are caused by social, economic, cultural and others factors. The lack of convergence in living standards across countries is one of the fundamental unresolved issues in economic development. The existence of poverty also leads to pessimism about the effects of market oriented and development policies.

According to the World United Nation Development, poverty is the core component which creates hunger and lack of food stuff. According to the current inference of the Food and Agriculture Organization by the United Nation in 2009, the number of hungry people worldwide has reached 963 million, or roughly 15% of the world population. According to the United Nation Program the inequality has increased at national and international level. More than 80% of the population lives in countries where income differentials are widening. The poorest 40% of the world population account for only 5% of the global income, while 20% of the richest people are getting 75% of the world income. The sense of poverty is hunger, illiteracy, inferior health facility, being deficient in food, inadequate education facilities and unemployment (Tahir et al., 2014). The poverty rate in Pakistan declined from 35% in 2002 to 13% in 2011 (World Bank). The rural poverty rate fell from 40% to 16% from 2002 to 2011. However Pakistan is now the second lowest headcount poverty rate in south Asian region.

In today's world no country is said to be developed and prospered if its majority of the population is living below poverty line. The millennium development goals (MDGs) of United Nations have moved to the final stage of the development debate and eliminating poverty and deprivations has become a central challenge for policy makers. The first goal of MDGs was to "Eradicate extreme poverty and hunger" and Pakistan is lagging in achieving this target. The poverty head count index though decreased from 30% in 2000-2001 to 22.3% in 2005-2006 still lagging behind the set target of 13%. This failure to achieve the MDGs target is basically due to the lack of firm policies about the poverty reduction in Pakistan.

Since Pakistan is a developing country and is facing poverty as one of the major issue, so there is need to focus on the poor segment of population. Pakistan ranks 6th in term of population in the world and if Pakistan focus in utilizing its abundant population effectively and efficiently, this population will be blessing for Pakistan rather than a problem.

Since poverty is a multi-dimensional concept and it has various determinants. Among these determinants, the macroeconomic variables have greater influence on poverty because these macroeconomic factors have policy affect which ultimately lead to affect the poverty in the country. These macroeconomic variables are gross domestic product (GDP), agricultural output, education, Foreign Direct Investment (FDI), domestic credit, inflation etc. So, there is need to understand how these variables can influence the poverty in the country. However, in Pakistan there is no any comprehensive empirical study examining the macroeconomic determinants of poverty using the latest available data. This study tries to fill this gap by using the latest data on macroeconomic variables and poverty headcount index in Pakistan.

2. LITERATURE REVIEW

2.1. Education and Poverty

Pervez (2014) studied the impact of education on poverty reduction. The study shows that the literacy rate has inverse and significant impact on poverty in long run but the expectancy of life has positive impact on poverty. He applied ADF, causality, and Johnson co integration methodology with time series data. Afzal et al. (2012) indicated the relationship among education, Poverty and economic growth in Pakistan. An empirical study shows that the education increases economic growth on other side, it decreases poverty by growing efficiency. They used Johnson co-integration model. Likewise, Janjua and Kamal (2011) indicated that the role of education and income in poverty alleviation. The results show that the income growth plays a temperately positive role in improving poverty, but the income distribution does not play a key role in alleviation in the sample overall. The empirical study also reveals that the education is the most significant contributor in poverty alleviation. They applied generalized least squares (GLS) technique. They used panel data of 40 developing countries for the period 1999-2007. Brown and Park (2002) studied the education and poverty in rural China. The results also show that the evidence of gender bias in which academically weak girls are more likely to drop out in primary school, while most boys continue on to junior secondary school. Women empowerment reduces the likelihood of dropping out but does not affect other outcomes. He used Cor-Proprtional Hazard model with household school survey data of five provinces of China. In addition, Niazi and Khan (2012) studied the impact of education on multidimensional poverty across the region in Punjab. The result shows that the occurrence of multidimensional poverty was higher in rural areas as compare to urban. The results indicate that the significant role of the education along with other regional and demographic features for being in the state of poverty.

2.2. Military Expenditures and Poverty

Kalim and Hassan (2013) studied the military expenditures and poverty in Pakistan. The study reveals that the military expenditure

and inflation have positive effect on poverty in Pakistan both in short and long run, while the growth of industrial sector and services helps in reducing poverty. They used Johansen co-integration test with time series data from 1972 to 2009. In addition to Kalim and Hassan (2014) studied the public defense spending and poverty in Pakistan. The study shows that the public spending has significant accelerating impact on poverty in long run and short run. The used autoregressive distributed lag (ARDL) bond testing approach by using time series data from 1976 to 2012.

2.3. Private Investment and Poverty

Tamunonimim (2014) studied the domestic debt and poverty in Nigeria. The result shows that domestic debt has positive impact on bank credit. He used ordinary least squares, vector auto regression, co-integration and granger causality approaches. The co integration results show that there is a long run relationship between poverty, RGDP, GDPPC, basic secondary school enrollment and domestic debt. He used time series data from 1986 to 2012. In addition to Hassan and Siddiqi (2010) studied the nexus of trade, investment and poverty. The empirical study reveals that the trade and investment promote economic growth and alleviate poverty. They used Johnsen Juseliuse approach and ECM to find the long run and short run relationship. They used time series data from 1980 to 2009.

2.4. Health and Poverty

Gupta and Mitra (2004) studied the economic growth, health and poverty. The results show that growth and health status incline to decrease poverty. The empirical study also shows that health status and economic growth are positively associated and literacy, industrialization appear to improve both health outcomes and growth and reduced poverty. In addition to Lawson (2004) indicated that the health, poverty and poverty dynamics in Africa. The study shows that income poverty is related with higher level of ill health, and long term sickness is also connected with poverty dynamics. The empirical study also reveals that the ill health of head of household has significantly negative effect for the well-being of all other household members and is particularly linked with household moving into poverty. He used both quantitative and qualitative data. He applied Multinomial Logit Marginal effects model with panel data.

2.5. GDP and Poverty

Tahir et al. (2014) studied the impact of GDP growth rate on poverty of Pakistan. The consequences of this study shows that the GDP growth has minor effects on the poverty and rising GDP growth rate could not create more jobs in the market due to policy failures, poverty eradiation policy. By using secondary data. Growth Elasticity of poverty model and Povcal net are used to estimate the poverty ratio. Similarly, Begum et al. (2011) realized the Economic growth and child poverty reduction in Bangladesh and China. The economic growth may can reduce child poverty but does not factual for all the times. By using decomposition framework model and secondary data. The findings of this study that the country side child poverty ratio in Bangladesh is higher than China but in border sense it is big issue for both of them. Similarly, Suryahadi et al. (2009) indicated the effects of location and sectorial mechanism of

economic growth on poverty. By applying GLS estimation technique and panel data to examine the results. The outcomes present that the rural services growth reduces poverty in all the sectors and locations. On other hand the urban services growth has the largest effect on poverty in most sectors. In addition to, Danate (2001) experiences the evolution of poverty in Chile. By using non parametric estimates of income distribution and stochastic dominance test. The empirical study exhibits that the economic growth of the Chile reduced the poverty. The result varies significantly across regions. The results also reveal that the regions producing exportable goods have reduced more poverty as compared to others. The findings show that the same policies will not be feasible for the every region.

Warr (2000) realized that the poverty incidence and economic growth in Southeast Asia by using headcount and pool data to measure poverty incidence in Thailand, Indonesia and Philippines. The empirical study indicates that the Southeast Asia has reduced the poverty over recent decades. Moreover, Ravallion (1994) realized that the growth and poverty evidence in developing countries. By applying regression technique to measure the relationship between growth and poverty. The results suggest that there exists strong negative relationship between poverty incidence and living standards across the developing countries. The result also reveals that 3% rate of growth in consumption per capita results in 6-10% reduction in the proportion of population living below poverty line.

2.6. FDI and Poverty

Munath et al. (2015) indicated that the impacts of FDI on economic growth. By applying multiple regression model on annual data this study analyses the impact of FDI on the economic growth, external debt, inflation, and remittance. The study shows that FDI plays a critical role for the economic development of the country. The results also suggest that external debt has negative impact on the development of the country. Similarly, Cesar and Marco (2006) studied the FDI and poverty in Latin America. The empirical study shows that the FDI has a potential influence to decrease poverty. The study further shows that the domestic and foreign investment are significant for reducing poverty, but under certain circumantances. They used panel data of 20 Latin American countries. They applied admittedly simplistic model to measure the results. Similarly, Shamim et al. (2014) experiences the impact of FDI on poverty reduction. They applied (ARDL) and co-integration technique on annual data to determine the relationship between FDI and poverty. The results of ARDL model reveals positive relationship among the variables such as GDP, trade openness, exchange rate, political stability, financial development and FDI. The results of co-integration technique suggests that FDI have inverse impact on poverty reduction in Pakistan. The acquisition of new technology through FDI can increase the ratio of technology, employment, human and capital development, contribution to international trade integration, enhancing domestic investment and the tax revenue of the country (Todaro and Smith, 2003; Hayami, 2001).

Chaudhary and Mahmood (2012) studied contribution of FDI in poverty reduction in Pakistan. ARDL and its error correction model are used to find the long run and short run relationships. The results of study suggest that the FDI decreases the poverty level. On the other hand the study also established long run and short run relationships between the variables. FDI, Government expenditure on health and education and economic growth has negative and significant impact on poverty.

2.7. Agricultural Growth and Poverty

Bhutto and Bazmi (2007) studied sustainable agriculture and eradication of rural poverty in Pakistan. A descriptive study shows that the association among rural poverty, access to land, population growth and agriculture growth. They found the increasing population, decreasing agriculture land, growing the demand for water resources, extensive land degradation and insufficient infrastructure are major anxieties of the agriculture sector in Pakistan. The study shows population growth, agriculture growth-poverty mitigation linkages. They suggested that the Pakistan can easily reduce poverty through agriculture sector in the future. Pakistan can enhance the productivity of agriculture sector through the providing of easy credit system to small farmers, availability of quality fertilizer and pesticides, tractor and harvester services, improvement in irrigation system and farmer education. They concluded that the high rate of population growth must be reduced to increase the agricultural productivity and control the poverty ratio in the rural areas of Pakistan. In addition to, Hussain (2005) studied agricultural growth and poverty reduction. A descriptive study shows that the leisurelier and unsteady growth in crop sector is accountable for the rapidly increasing poverty and inequality in rural areas of Pakistan throughout 1990s. The study shows some of the structural constraints and policy framework that cause the declining growth rate of per acre and increased instability in the growth. He proposed the elite farmer strategy replaced with a small farmer strategy and also open the small enterprises, industries in the rural sector. Similarly, Mellor et al. (2001) studied employment multipliers from agricultural growth and poverty reduction. The study shows that the Pakistan has remarkably favorable in natural resources. To take the more benefit from the opportunity so its mandatory to emphasize on the agriculture sector. The study emphasized to improve institutional problems, irrigation management system, spending high budget on agricultural research, expenditure on public sector to increase the Agri- business of exportable crops. He also found that the unequal land distribution in the Sindh province is also the responsible for low growth rate and poverty in Pakistan.

2.8. Limitation of the Study

Although there are so many other factors that possibly have greater influence on poverty in Pakistan, we could not incorporate all these variables in this study due to unavailability of the data for a longer time period. This study could also be done for provincial wise poverty situations in Pakistan but again in Pakistan we have no data available for provincial poverty status. Therefore, keeping in view about the data limitations, we have taken four major influencing factors of poverty namely, agriculture GDP to total GDP ratio, education enrollment ratio, ratio of the domestic credit to private sector, military spending and the ratio of the FDI.

3. METHODOLOGY

The variables which are under consideration in this study including poverty headcount index, gross primary enrollment ratio, ratio of FDI to GDP and the ratio of agriculture GDP to total GDP, ratio of the domestic credit to private sector and ratio of the military expenditure as percentage of GDP. Based on these variables we have constructed the following econometric model:

$$Poverty_t = \beta_0 + \beta_1 GER_t + \beta_2 DC_t + \beta_3 ME_t + \beta_4 FDI_t + \beta_5 Agri_t + \mu_t$$

Where:
- $Poverty_t$ is poverty headcount ratio
- GER_t gross enrollment ratio, primary education
- FDI_t is the ratio of FDI to GDP
- $Agri_t$ is the ratio of agriculture GDP to total GDP
- DC_t is the domestic credit to private sector as percentage of GDP
- ME_t is the military expenditure as percentage of GDP

The data on above variables have been collected from World Development Indicators and various issues of economic survey of Pakistan for the period 1974-2014.

3.1. Estimation Techniques

3.1.1. Unit root test

Testing for co integration among variables that are used in the above model primarily needs, a test for the presence of unit root for every individual variable, using the ADF test (Dickey and Fuller, 1979) based on the auxiliary regression.

$$\Delta Y_t = \alpha + \delta t + \beta Yt - 1 + \sum_{i=1}^{k} \gamma \Delta Yt - 1 + \mu t$$

The above auxiliary regression, tests for the possible existence of a unit root in Yt. The variable $\Delta Yt-1$, shows the lagged first differences, presents the serial correlation errors and α, δ, β and γ are the parameters, of the equation which are to be estimated. The null, and alternative hypotheses, for the above equation can be written in the following way:

Ho: $\beta=0$,
Hϵ: $\beta<0$

To test the above null hypothesis, the t-statistics criterion is generally used. According to this method if the, t-statistics are less than the critical values, then the null hypothesis ($\beta=0$) cannot be rejected.

3.1.2. Co integration test Johansen co integration test

Co integration test are designed for non-stationary variables, in order to know the long run relationship, between the variables. The method of co integration was introduced by Granger (1981) and basic purpose of this test was to protect the losses, of long run information of data which occurs due to time series. The linear combination of variables is, I(1) and also I(0) then variables are said to be co integrated with each other's and also requires that time series data is to be non-stationary, at the level and stationary at the first difference. We use the Johannes co integration test for the above model. Co integration of two or more series suggests, that there is a long run relationship between them.

The co integration analysis captures, the dynamic relationship among the variables. Assume that the process z_t is define, by an unrestricted vector auto regressive system of order (n×1).

$$Z_t = \prod_1 Z_{t-1} + \prod_2 Z_{t-2} + ... + \prod_k Z_{t-k} + \mu_t \tag{1}$$

Where, z_t = (n×1) vector, of I(1) variables π_i = (n×n) matrix of unknown parameters, to be estimated (I = 1, 2, 3 … k) u_t. The independent variables, and identically distributed (n×1) vector of error term's = 1, 2, 3 …. m observations.

Using $\Delta = (I-L)$, where L is the lags operators. The above can be in the error correction form

$$\Delta Z_{t-1} = \sum_{i=1}^{k-1} \Gamma i \Delta Z_{t-1} + \Pi Z_{t-k} + \mu_t \tag{2}$$

Where, ΔX_t is an I(0) vector. I is an (n×n) identity matrix.

$$\Gamma i = \sum_{i=1}^{k-1} \Pi i\text{-}I, , i=1,2, … k-1 \tag{3}$$

And,

$$\Pi = \sum_{j=1}^{k} \Pi j\text{-}1 \tag{4}$$

The equation 4 is called vector error correction.

Johannes's approach is an estimator of the co integration vector, of the autoregressive process, along with the independent errors. The vector n×n can also be shown as the multiple of α and β, two (n×r) each of rank, where a indicates r co integration and β shows the weighting elements and therefore, the above equation is written as:

$$\Delta X_t = \sum_{i=1}^{k-1} \Gamma i \Delta X_{t-1} + (\beta \alpha) X_{t-k} + \mu_t \tag{5}$$

Here the hypothesis of r co integration relation among the element of z_t.

The null hypothesis of no co integration relations (r=0) which implies, $\pi=0$ thus co integration test is the estimation of π are, significantly different from 0 and also test for the number of co integration test. On the other hand when there is no co integration relation, where $0 \le r < n$. there is no co integration relation then the linear combination variables is stationary. The order of r is determine by using, likelihood ratio (LR) trace test statistics suggested by Mackinnon et al. (1998).

$$\lambda_{trace(q,n)=-T} \sum_{i=q+1}^{K} \ln(1-\lambda_i) \tag{6}$$

For r=0, 1, 2 …k−1. T represent the number of observation used for estimation is ith largest estimated Eigen value.

$$\lambda_{max(q,q+1)} = -T\ln(1 - \lambda_{q+1})$$

Trace statistics reject the null hypothesis, of co integration among the variables (r=0) does not reject the null hypothesis, that there is one co integrating relation between the variable (r≤1).

4. DATA ANALYSIS AND RESULTS

4.1. Unit Root Test

Like in many time series data, variables are first tested for stationary. For this purpose, we use augmented Dickey Fuller test to check the stationary of variables at level as well as at 1st difference and the results of ADF test are reported below in Table 1.

Table 1 presents the ADF test results for the levels of and first difference of the variables Agri, GER, FDI, DC, ME and Poverty. The result of the ADF test shows that the critical values at 1%, 5% and 10% are −3.581, −2.926 and −2.601 respectively. Thus, the time series Agri, GER, FDI, DC, ME and Poverty are not stationary at level. Furthermore we have calculated the ADF at first differences. The ADF test statistics at difference are −6.800 for Agri, −6.412 for GER, −5.112 for FDI, −5.463 for DC, −7.854 for ME and −3.367 for Poverty. All these statistics are greater (in absolute terms) than the critical values at 1%, 5% and 10% and thus these values show all the variables are stationary at first difference. So in summary we can say all variables namely Agri, GER, FDI, DC, ME and Poverty are integrated of the same order i.e., integrated of order one, I(1).

4.2. Johansen Co-integration Analysis

Co-integration methodology allows us to test for the presence of equilibrium relationship between economic variables. If all variables included in the test are integrated of order one, the next step is to test the existence of a co-integration relationship between the variables under consideration. For this, we use the Johansen co-integration test procedure. But firstly, we determine lag length of unrestricted VAR model considering six different lag selection criterions including LR, Final Prediction Error Criterion, Akaike information criterion, Schwarz information criterion and Hannan-Quinn information criterion. The maximum lag number selected is 1.

There are two test statistics for the number of co-integrating vectors: The trace and maximum Eigen-value statistics. In the trace test, the null hypothesis is that the number of co-integrating vectors is ≤ r, where r = 0, 1 or 2, tested against the alternative hypothesis. In the maximum Eigen-value test, the null hypothesis r = 0 is tested against the alternative that r = 1, and null hypothesis r = 1 is tested against the alternative r = 2. The results of Johansen Co-integration rank test based on the maximum Eigen-value and trace statistics indicate that there exists long-run relationship among the variables Poverty, GER, DC, ME, FDI and Agri. The results are reported in Table 2.

Table 2 indicates that both trace statistics and max Eigen value reject the hypothesis of no co-integration as the critical values

of max Eigen and trace statistics greater than the values of test statistics of Max Eigen and Trace Statistics. The Table 2 further shows that both Max-Eigen value and Trace Statistics supports that the null hypothesis there exists no co-integration (r = 0) has been rejected in favor of the alternate hypothesis there exist one co-integrating relationship between the variables. Thus it is concluded from Table 2 that there exists long run relationship between poverty headcount index, education, domestic credit to private sector, military expenditure, FDI and agriculture in Pakistan.

After confirmation the existence of the long run relationship between the variables under consideration, we have tested for the calculation of long run estimates and the long run estimates based on Johansen co-integration test has been presented in Table 3.

Table 3 reveals the long run estimates based on Johansen co-integration test. It shows that all the variables have significant negative impact on poverty in Pakistan except military expenditure. The coefficient of DC is −6.985 which is negative and significant. It indicates there is negative impact of domestic credit to private sector on poverty in Pakistan. Similarly the coefficient of Education enrollment (GER) has also negative sign and it is also significant. It means that if there is increase in education enrolment in Pakistan, the poverty headcount index will tends to decrease in long run. The negative signs of coefficients of FDI and Agri have confirmed there is negative impact of FDI and Agriculture on poverty in long run. However, the interesting result derives from this analysis is that military expenditure has significant positive impact on the poverty in Pakistan. This result could be justified as Pakistan spends its lion share of its budget on defense sector then it leads to causes decrease the spending on the productive development sectors and thus, poverty tends to increase.

In Table 4 we show the short-run results of Johansen co-integration. These results show none of the variables have any significant impact on poverty in short run in Pakistan. The short run results also show that the error correction term is statistically significant and has expected sign as the coefficient of the error correction term is = −0.07, suggesting that when poverty is above

Table 1: Results of unit root test

Variables	Level	First difference	Order of integration
Agri	−2.257	−6.800	(1)
GER	0.6818	−6.412	(1)
DC	−1.518	−5.463	(1)
FDI	−2.250	−5.112	(1)
ME	−1.176	−7.854	(1)
Poverty	−1.963	−3.367	(1)

Critical values 1% = −3.581, 5% = −2.926, 10% = −2.601

Table 2: Results of Johansen test for co-integration

Max-Eigen-value test				Trace statistics			
H0	Maximum	CV (95%)	P	H0	Trace	CV (95%)	P
r=0*	40.928	40.077	0.040	r=0*	107.516	95.753	0.006
r=1	24.750	33.876	0.402	r=1	66.587	69.818	0.088
r=2	19.697	27.584	0.362	r=2	41.837	47.856	0.163
r=3	11.326	21.131	0.614	r=3	22.139	29.797	0.290
r=4	9.953	14.264	0.215	r=4	10.814	15.494	0.223

*Max-Eigen-value and trace statistics indicate one co-integration at 0.05 levels

or below its equilibrium level, it adjust by almost 7% within the first year. So there is stability in the long-run and converging towards equilibrium. The ECM model also discusses the diagnostic and stability tests. The results of diagnostic tests are reported in lower part of Table 4. R^2 shows that the model is relatively good fit. The diagnostic tests statistics confirm the absence of serial correlation in the model.

5. DISCUSSION

Elimination of poverty is the main agenda of developing countries because in developing countries a substantial population is living below poverty line which in turn is a biggest impede in the way of economic development of the country. In September 2000, 189 countries adopted the United Nations Millennium Development Declaration and resolved to "Spare no Effort to free our fellow men, women and children from the abject and dehumanizing conditions of extreme poverty" (Levitas and Gordon, 2006). Therefore, this study takes into account this important topic and investigates the impact of major macroeconomic variables on poverty in Pakistan. Results of the study reveal that increase in agricultural output has significant negative impact on poverty in Pakistan. This result is meaningful in the context of Pakistan because in Pakistan almost two-third of the population lives in rural areas and agricultural is the major source of livelihood to this population. Agriculture contributes nearly 21% of the Pakistan's GDP while employing 42 % of the labors force (Ministry of Finance, 2013). It shows that the contribution of agriculture sector to national GDP is minimal as compare to its share of population and labor force. Concentrating more on agricultural sector could be beneficial for Pakistan's economic development because a lion share of employment in Pakistan can be absorb by this sector as it has substantial potential for

Table 3: Long run estimation based on Johansen co-integration test

Dependent variable: Poverty (Pov)		
Regressor	Coefficients	t
Agri	−15.55	−4.831
GER	−4.741	−3.391
FDI	−91.325	−6.677
DC	−6.985	−2.620
ME	60.744	5.095

Table 4: ECM results based on Johansen co-integration test

Regressor	Coefficient	t
DEdu. (−1)	0.006508	0.064
DDC (−1)	0.2133	1.85
DFDI (−1)	−0.0799	−0.144
DAgri (−1)	0.387	1.8045
DME (−1)	−0.552	−1.3658
Intercept	5.5819	3.703
ECT (−1)	−0.07	−2.017
R^2	0.3058	
F-statistics	2.39	
Serial correlation	16.32	
P	0.125	

employment generation. Thus effective utilization of agriculture sector in Pakistan will lead to increase in employment of the country which in turn reduces the poverty in a greater number.

The result of negative impact of FDI on poverty can be justified in several ways. The inflow of FDI fills the gap between desired investment and domestically mobilized saving. It also improves the technology, management and labor skills in the host countries. The vicious cycle of poverty can also be broke out with the help of FDI. Further the benefits from FDI may consists of generation of employment, acquisition of new technology, development of human capital, increasing domestic investment, enhancing tax revenue and also cause to integration of international trade in the host countries. All these advantages of FDI contribute significantly to economic growth and high employment growth in the host countries and which ultimately causes the poverty to reduce. However, it is pertinent to note that the impact of FDI on poverty reduction depends on many factors. These factors include the quality of institution, the government policies, the quality of labor market and the economic environment in the host countries.

The study further shows that education enrollment has significant negative impact on poverty in Pakistan. Education is o considered a major remedy for many problems faced by developed and developing countries and the role of education enrollment in the process of human development is well recognized. Providing better education to people is not only a goal itself for a better quality of life but also it has positive impact on the economic growth of a country (Rebelo, 1991). Education plays a great role in the economic development of a nation, thus educational enrollments are found to constitute a form of nation's prosperity. It increases individual's chances of employment in the labor market, and allows them to reap financial and no financial returns and gives them opportunities for job mobility which ultimately reduce the poverty from the country.

The positive and significant impact of military expenditure on poverty in Pakistan can be justified on different ways. The defense budget of Pakistan which is using on military expenditures are approximately 18% of the total GDP (Pakistan Economic survey). The military expenditures are directly related with the poverty because these expenses are affecting economic growth and employment ratio. The volume of defense expenditures is depending on the terrestrial, political, and strategic position of the country. Geo political conflicts and domestic ferocity tend to affect defense expenditure. According to the World Bank Pakistan has ranked 10th in the world in term of arm imports. These unproductive expenditures create unemployment and other social evils in the country and ultimately facing poverty. Ali and Ather (2013) also found that defense expenditure retard economic growth.

The scientific study result also shows the negative and significant impact of domestic credit to private sector. Domestic credit to private sector enhances economic growth and employment opportunities and reducing poverty. Economic growth is the first phase for poverty reduction. In developing countries almost 90% employment is generating through private investment. Private investment is an important tool for generating Government

revenue. In developing countries like Pakistan the investment in agricultural sector has more elasticity as compare to the other sectors of the economy. The investment in agriculture sector can reduce more poverty in Pakistan.

6. CONCLUSION AND POLICY IMPLICATIONS

This study demonstrates the impact of major macroeconomic variables on poverty in Pakistan by taking data set for the period 1974-2014. For this Johansen co-integration technique has been applied with multi diagnostics tests. The macroeconomic variables taken in this study are agricultural ratio to GDP, FDI, Education enrollments, domestic credit to private sector and military expenditure and this study concludes that all these variables have significant effect on poverty in Pakistan. In the case of agricultural ratio to GDP, an increase in agricultural output leads to decrease poverty since Pakistan is basically an agricultural country where agriculture sector contributes to country's employment level significantly. This positive contribution to employment sector is the reason of poverty to fall.

The study also reveals gross primary education enrollment has significant negative impact on poverty in long run. From this result it can be inferred that education helps in reducing poverty and improving the socio economic status of both the individuals as well as the society. By educating more individuals in the country, the population of poor can be reduced.

Likewise it is also concluded from this study that domestic credit to private sector has significant negative impact on poverty. In Pakistan private sector has a significant role in explaining the employment of the country. This increased in employment ultimately reduces poverty rate and hence negative relationship exists between poverty and credit to private sector.

Findings of this study further elaborate that FDI has significantly negative impact on poverty in Pakistan. FDI generates employment, acquisition of new technology, development of human capital, increase in domestic investment, enhancing tax revenue and integration of international trade in the host countries. All these benefits of FDI are the main sources of poverty to decrease. It is evident from this study that defense expenditure has significant positive impact on poverty in Pakistan. As increased in military expenditure has trade off effect on the spending on other productive sector and it leads to reduce spending on productive sectors like education other development sectors. These reductions ultimately increases poverty rate in the country.

Based on the findings of this study the following policy recommendations are recommended:

1. Education needs to be delivered inclusively equitably and effectively across Pakistan to confirm that it is a driver of social cohesion and resilience. The government of Pakistan should make further efforts to ensure the quality and coverage of education through effective policy implications and allocation of expenditure. The curse of poverty therefore, can be avoided through quality of education.

2. Due to significant and negative impact of FDI on poverty in Pakistan, it is obvious that labor intensive industries can eliminate poverty to a greater extend. Furthermore, like other developing countries, Pakistan has comparative advantage in labor intensive production; therefore, the government of Pakistan should attract inflow of more FDI in labor intensive industries. In this regard the policy should include tax incentives to foreign investors, formulating investment friendly policies and managing law and order situation.

3. Pakistan is an agriculture based country. However, the contribution of agriculture to GDP is only 21% and its share in employment is 42%. These contributions of agriculture are minimal as compare to its share of population and labor force. In this regard the government of Pakistan should more concentrate on agriculture while enhancing the productivity of this sector through the provision capital input which possibly speeds up the process of transformation. These inputs include efficient provision of easy credit to farmer, unadulterated fertilizer and pesticide, improvement in effectiveness of the vast irrigation system and educating the farmers about new techniques of harvesting and market access. The price of inputs in the production process should be subsidized to reduce the increasing cost of cultivation. Furthermore, in order to boost up the productivity of agriculture sector, the government should also give relief in imposition of tax to agriculture sector. These steps surely help in reducing the poverty level in the country.

4. Due to significant and negative impact of domestic credit to private on poverty, Pakistan should encourage private sector to operate in the country and should reduce policy rate (interest rate) so that domestic credit can easily be provided to private sectors.

REFERENCES

Afzal, M., Malik, M.E., Begum, I., Sarwar, K., Fatima, H. (2012), Relationship among education, poverty and economic growth in Pakistan: An econometric analysis. Journal of Elementary Education, 22(1), 23-45.

Ali, A., Ather, M. (2014), Impact of defense expenditure on economic growth: Time series evidence from Pakistan. Global Journal of Management and Business Research: B Economics and Commerce, 14(9), 26-31.

Begum, S.S., Queheng, D., Qustafsson, B. (2011), Economic Growth and Child Poverty Reduction in Bangladesh and China. Discussion Paper No 5929 of Institute for the Study of Labor. p1-30.

Bhutto, A.W., Bazmi, A.A. (2007), Sustainable agriculture and eradication of rural poverty in Pakistan. Natural Resources Forum, 31(4), 253-262.

Brown, P.H., Park, A. (2002), Education and poverty in rural China. Economics of Education Review, 21(6), 523-541.

Cesar, C.C., Marco, A.H. (2006), The foreign direct investment and poverty in Latin America. Globalization and Economic Policy Fifth Annual Postgraduate Conference.

Mahmood, H., Chaudhary, A.R. (2012), A contribution of foreign direct investment in poverty reduction in Pakistan. Middle East Journal of Scientific Research, 12(2), 243-248.

Danate, C. (2001), Economic growth and poverty reduction by region: Chile 1990-1996. Development Policy Review, 19(13), 291-302.

Dickey, D.A., Fuller, W.A. (1979), Distribution of the estimators for

autoregressive time series with a unit root. Journal of the American Statistical Association, 74(366a), 427-431.

Granger, C.W. (1981), Some properties of time series data and their use in econometric model specification. Journal of Econometrics, 16(1), 121-130.

Gupta, I., Mitra, A. (2004), Economic growth, health and poverty: An exploratory study for India. Development Policy Review, 22(2), 193-206.

Hassan, M.S., Siddiqi, M.W. (2010), Trade-poverty nexus: An empirical investigation from Pakistan. Interdisciplinary Journal of Contemporary Research in Business, 2(6), 500-519.

Hayami, Y. (2001), Development Economics: From the Poverty to the Wealth of Nations. Oxford: Oxford University.

Hussain, A. (2005), Agriculture growth and poverty reduction: A policy perspective. In: International Seminar on Management of the Pakistan Economy, Lahore School of Economics, Pakistan.

Janjua, P.Z., Kamal, U.A. (2011), The role of education and income in poverty alleviation: A cross-country analysis. The Lahore Journal of Economics, 16(1), 143-172.

Kalim, R., Hassan, M.S. (2013), Military expenditure and poverty in Pakistan: A complex phenomenon. In: Proceedings of 3rd International Conference on Business Management, School of Business and Economics, University of Management and Technology, Lahore, Pakistan.

Kalim, R., Hassan, M.S. (2014), Public defense spending and poverty in Pakistan. Review of Public Economics, 4(3), 93-115.

Lawson, D. (2004), Health poverty and poverty dynamics in Africa. Proceeding of the Mediterranean Seminar on International Development. p1-17.

Levitas, R. (2006), The concept and measurement of social exclusion. Poverty and Social Exclusion in Britain. The Millennium Survey. Bristol: Policy Press. p123-160.

MacKinnon, J.G., Haug, A.A., Michelis, L. (1998), Numerical distribution functions of likelihood ratio tests for co-integration. Journal of Applied Econometrics, 14(5), 563-577.

Mellor, J.W., Altaf, Z., Salam, A. (2001), Employment multipliers from agricultural growth and poverty reduction. The Pakistan Development Review, 40(4), 371-400.

Ministry of Finance, Economic Survey of Pakistan. (2013), Government of Pakistan.

Muntah, S., Khan, M., Haider, N., Ahmad, A. (2015), Impact of foreign direct investment on economic growth of Pakistan. American Research Journal of Business and Management, 1(1), 7-11.

Niazi, M.I., Khan, A. (2012), The impact of education on multidimensional poverty across the regions in Punjab. Journal of Elementary Education, 21(1), 77-89.

Pervez, S. (2014), Impact of education on poverty reduction: A co-integration analysis for Pakistan. Journal of Research in Economics and International Finance, 3(4), 83-89.

Ravallion, M. (1994), Growth and Poverty: Evidence for Developing Countries in 1980's. Washington, DC: Elsevier, Policy Research Development, The World Bank.

Rebelo, S. (1991), Long-run policy analysis and long-run growth. The Journal of Political Economy, 99(3), 500-521.

Shamim, A., Azeem, P., Naqvi, S.M.M. (2014), Impact of foreign direct investment on Poverty reduction in Pakistan. International Journal of Academic Research in Business and Social Sciences, 4(10), 465-490.

Suryahadi, A., Sryaderma, D., Sumarto, S. (2009), The Effects of location and sectorial components of economic growth and poverty: Evidence from Indonesia. Journal of Development Economics, 89, 109-117.

Tahir, S.H., Perveen, N., Ismail, A., Sabir, H.M. (2014), Impact of GDP growth rate on poverty of Pakistan: A quantitative approach. Euro Asian Journal of Economics and Finance, 2(2), 119-126.

Tamunonimim, A.N. (2014), Domestic debt and poverty in Nigeria: An empirical time series investigation. European Journal of Accounting Auditing and Finance Research, 2(5), 33-37.

Todaro, M.P., Smith, S.C. (2003), Economic Development. 8th ed., Vol. 2. England: Pearson Education Limited. p119-126.