Effect of education, economic growth and inflation on poverty reduction in Pakistan

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Abstract

This paper provides new empirical evidence concerning the impact of education, economic growth and inflation on poverty reduction. The study utilizes the time series data of education, poverty, economic growth and inflation for the span of 1973 to 2014 in case of Pakistan. Time series data over the period from 1973 to 2014 is fitted into the Ordinary least square (OLS) regression equation by using econometric technique such as Augmented Dicky Fuller (ADF) unit root test. The results of OLS regression confirm that education and economic growth has a negative correlation while inflation has positive correlation with poverty. The finding of our paper is consistent with the idea that poverty reduction in Pakistan will need to be adjusted with more focus given on direct targeting through helping the poor people to increase their education and income. Moreover, this study also suggests that poverty can be reduced in Pakistan by increasing economic growth and education while keeping inflation decline.

Keywords: Education, Economic Growth, Inflation, Poverty, Pakistan.

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1. Introduction

Poverty is the world's current greatest threat to stability and peace than terrorism and other highly publicized struggles. According to the estimation of Sachs (2009), more than eight million people around the world die each year because of poverty. The United Nation Development Project (UNDP) estimated that 1.4 billion people are living in extreme poverty in the world. Among these 93% live in three regions East Asia, South Asia and Sub-Saharan Africa (UNDP, 2010). Poverty has different types and it varies from place to place across the time and it describes in many ways. Such as Amrtya Sen in 1981 in his book "Development As Freedom" stated that poverty is a lack of capabilities rather than merely taking into consideration the income aspect which forms a standard measurement as to whether the person is poor or not. While according to international Labor organization ILO (1995) the poverty is a situation in which a person or household lacks the resources necessary to be able to consume a certain minimum basket of goods the basket consists either of food, clothing, housing, and other essentials (moderate poverty) or of food alone (extreme poverty) (J. Muhammad, CRizw. ana, 2007). However, The World Bank defines extreme poverty as living on less than US$1.25 per day (PPP), and moderate poverty as less than $2 a day (World Bank, 2008) Pakistan measures poverty in terms of World Bank definition of poverty that define "a persons who earn income which cannot meet the daily intake of about 2350 calories per person are considered below the poverty line "(World Bank 2006).

Generally, there are many factors that become the reason of poverty in a country such as political instability, poor economic growth, high inflation rate, income inequality, and lack of education, lack of health access, unemployment and crimes. But, education is considered a powerful tool in reducing poverty, empowering people, improving economic growth, enhancing private earnings and creating competitive economy. Moreover, when the people will more educate, they will more participate in workforce which will enhance

the economic growth of a country. For example in Nepal the completion of at least seven year schooling increased productivity in wheat by over a quarter, and in rice by 13 % (Jamison &Moock, 2004). However, Education and economic growth are inter-correlated with each other. Therefore, when economic growth increases then the education level also increases and vice versa. On the other hand, economic growth is also associated with inflation which hits the poor people more severely than the rich and high income people (Choi et al, 1996). Therefore when the inflation increases the economic growth declines which gives rise poverty in a country.

Pakistan is a developing country and it faces many challenges since its independence. But poverty is big challenge that Pakistan is facing from many decades. According a survey 1.2 billion people of Pakistan are living below the poverty line. Among these 75% are living in rural areas and 25 % are in urban areas (H.Yousaf, A.Imran, 2014). Pakistan has experienced higher poverty rate during 1990's because of lower economic growth and higher inflation rate. But in recent decades the poverty rate is declining sharply than the previous decades. The decline in poverty is occurring due to increase economic growth and education level and lowering inflation rate. The main objective of this study is also to empirically analyze the impact of education, economic growth and inflation on poverty and how these variables can help to reduce poverty in Pakistan. A lot of research has done in history of Pakistan in finding factors that might be helpful to reduce poverty in Pakistan. But no one did research to analyze the impact of economic growth, education and inflation on poverty in Pakistan. Mostly research has done to analyze the impact of education on economic growth. But this paper gives the empirical evidence how economic growth and education can reduce poverty in Pakistan by lowering inflation rate. This paper also depicts that education and economic growth has negative relationship with poverty while inflation has positive impact on poverty. Its shows that when the level of education and economic growth increase then poverty declines and when economic growth and education decline then the poverty increases in Pakistan. Similarly, when the inflation decrease poverty increases and when inflation increases the poverty decreases. Pakistan is still lack behind to achieve the target of millennium development goal to

mitigate the poverty in Pakistan. But in recent decades Pakistan has introduce various poverty alleviation measures such as microfinance banking, Banazir income support programme, khushali bank, and baitul mall to reduce poverty.

Literature review:-

Various studies have been explored the impact of education, economic growth and inflation on poverty. But, most of research work has been done internationally. We have critically reviewed some of these important empirical studies to develop objectives in the context of Pakistan and further, to analyze it to draw some important conclusion and policy recommendations. Psacharopoulos (1998) estimated the relationship between education, income inequality and poverty in 18 countries of Latin America in 1990. He found that education is the variable with the strongest impact on income inequality and poverty. Bourguignon and Morrison (2000) revealed that one percent labor force with at least secondary education would enhance the per capita income that help to reduce poverty in a country. Lucas (2008) explained that when the education of work force will be higher the productivity will also improve which increase the economic growth of the country that will positively impact on poverty. Perotti (2008) presented that the increase in income per capita also increases the average level of education. Kruger & Maleckova (2003) analyzed the causal relationship between education, terrorism and poverty. He concluded that crimes and low level of education and low wages has become the causes of poverty. Hakim, Razak & Ismail (2010) estimated the casual relationship of poverty and social capital. The results revealed that social capital played an important role in poverty alleviation. Norton (2010) regressed OLS model and showed the magnitude of schooling and it also revealed that institution also help to reduce poverty by improving human capital. Tilak (1994) explained that education and poverty are inversely correlated with each other. Bernstein (2007) & Ladd (2011) exhibited that education is negatively correlated with poverty. The negative correlation between poverty and education may be due two reasons. The high poverty may result in low educational attainment. Lack of

education might be big hurdle for an individual to earn. Hence low education may result in high poverty vice versa.

Sabir, Hussain and Saboor (2006) investigates the status of poverty in central Punjab by using the data of 300 small farmers. He found that education is the most important factor to reduce poverty. Chaudhry & Rehman (2009) analyzed that the size of household and female to male ratio has significant and positively impact on poverty. While education of head of household and ratio of earners female to male have been significantly and negatively impacted the rural poverty. Chaudhary et.al. (2010) inspected the role of education in reducing poverty. The result of this study depicts that primary and middle education is positively related to poverty while university education is negatively related to poverty. Afzal et al (2010) explored the relationship between real GDP, inflation poverty and school enrollment ratio. The results of this study showed that in SR, economic growth and school education are inversely related while in LR, school education and economic growth are interlinked with each other by two ways. This study recommended that increasing school education and economic growth is very helpful to reduce poverty in Pakistan. Janjua and Kamal (2011) also estimate a random effects model to examine the impact of growth and education on poverty using a panel dataset for 40 developing countries for the period 1999 to 2007. Their study shows that growth plays a moderately positive role in poverty reduction, but that income distribution did not play a key role in alleviating poverty in the sample overall. The study also shows that the most significant contributor to poverty alleviation was education.

Kimenyi (2006), Kraay (2005), Ken (2002), Page (2005) and Islam (2004) accorded a lot work on growth that is beneficial for poor. Todaro (1997) elaborated that economic growth does not improve the life of very poor but it enhance the lives of middle class and rich people. This process worsening of the distribution of income which then increase poverty. Duclose, et al (2010) explained that higher growth rate leads to reduction of poverty. Son and kwani (2004) manifested that economic growth is a blunt tool for the reduction of poverty. Stevans and Sessions (2008) examined the impact of economic growth on poverty levels in the United States from 1959 to 1999. They found

that increase in economic growth are significantly related to poverty reduction for all families in the United States. McKay (2013) analyzed the nexus of growth and poverty reduction in 25 of the largest sub- Saharan countries in the last two decades by using the information from household survey. He estimated that there has been a significant reduction in poverty in most of these countries. Okoroafor and Chinweoke (2013) analyzed the relationship between poverty and economic growth in Nigeria for the period 1990-2011. They could not find any evidence of a correlation between economic growth and poverty. Heltberg (2011) depicted that high growth is less impactful for the least developed countries than other developing countries because the impact of growth on poverty reduction increase with improving the average income. Rashid and Amjad (1997) studied the macroeconomic policies and their impact on poverty reduction, founds that the growth above a threshold level of about 5 percent, increase in employment and remittances are the most important variables explaining the change in poverty over time.

Economic growth is associated with inflation and macroeconomic policies. Number of empirical studies by Keidel (2007), Azzoni et al (2004), Nouve dan Wodon (2008), Singh et.al (1986), Deaton (1989; 1997), Demombynes et.al (2008), Tsimpo and Wodon (2008), Vedder and Gallaway (2001), Epaulard (2003), James et.al (2008), Easterly and Fisher (2001; 2004), Son and Kakwani (2006) and Akande, et all (2003) found that fluctuation on macroeconomic indicators, one of them is inflation rate, do have significant impact on poverty level. In developed countries such as US shows that inflation has negative impact on economic growth (Bruno, Easterly, 1998). It lowers down the purchasing power of the people that lowers down their real income which leads toward poverty. Agenor (1998) explained that inflation is positively related to poverty. When the inflation increases poverty rate also increases and vice versa. Fischer (1993) showed that inflation is bad for poverty reduction because it erodes real purchasing power that push poor people below the poverty line. Cardoso (1992), Powers (1995), Ravallion (1998), and Braumann (2004) find that there is a positive correlation between inflation and poverty. Power (2005) analyzed that inflation mostly disturb the consumption based poverty rather than income based poverty. Romer (1998) explained

the effect of inflation on poor people. He concluded that the increase in inflation decreases the unemployment rate in short run that relatively benefit to the poor people. Blank and Blinder (1985) found no such relationship between inflation and poverty. Asra (1999) estimated the relationship between inflation and poverty in Indonesia. The study presented different methodology to estimate poverty by using the ratio of urban and rural food prices and observed inflation rates. However, the impact of inflation rate on poverty still not being observed. Cutler and Katz (1991), in contrast, found that an increase in inflation reduces the poverty rate in the United States.

Chaudhry and Chaudhry (2008) found that food price inflation increases poverty in Pakistan. Ali (2013) demonstrated that higher inflation rate destroy domestic investment in Pakistan that leads toward poverty. Mubarak (2005) explained that lower inflation rate and higher economic growth increase the employment rate and reduce the poverty rate. Ayyoub et al. (2011) estimated the relationship between inflation and growth. He found that inflation has negative relationship with growth it also harmful for the GDP growth of the economy. Chaudhary and Ahmed (1995) examined the money supply, deficit and inflation relation in case of Pakistan. They concluded that inflation creates poverty through income redistribution.

Model

The variables are chosen on the base of selected studies given in literature review and time series data from 1973 to 2014. For regression analysis we develop a model in which we use poverty as a dependent variable and all other variables such as education, economic growth and inflation are independent variables. The functional form of proposed model:

Poverty = f (Economic growth, Inflation, Education)

The model is:

$$Y = \alpha_0 + \alpha_1 \text{edu} + \alpha_2 \log(gpc) + \alpha_3 pai + \varepsilon_t$$

Y represents the Population below the Poverty Line,

pai is the inflation,

edu is the Government expenditure on education, total (% of GDP),

gpc is GDP per capita (current US$), lgpc= log(gpc)

Methodology and Results

In this paper Ordinary least square (OLS) method is used to determine the effect of economic growth, education and inflation on poverty in Pakistan by using the time series data of all variables over 1973 to 2014. The data of all variables are taken from World Bank indicator and National bureau of statistics. Before applying OLS regression when we deal with time series data the first important step is to check whether the underlying time series data is stationary or not stationary. If the variables are stationary it gives an appropriate regression estimation by using OLS method. But if we apply OLS on non-stationary variables then it gives spurious regression. The stationary of the data series is carried out through the Augmented Dicky fuller test (ADF) unit root test and the phillips perron (PP) unit root test. It is confirmed from Table 1 thereby implying an I (1) series. OLS is an appropriate method if all the variables are I (0) i.e. stationary at significant level. The results of the unit root test via ADF are jointly presented below in table 1 where it shows that all the variables are stationary. The table 1 also depicts that all variables are also significant because the value of p is smaller than 0.05.

Table 1. Augmented Dickey-Fuller and Phillips-Perron unit root tests on all variables

Unit root test

Variable	Test type	ADF test statistics	Prob
Y	(C,T)	-2.2320	0.4597
	(C,0)	-2.1997	0.2095
	(0,0)	-3.1084	0.0027
Log(GPC)	(C,T)	-3.5397	0.0486
	(C,0)	-2.4237	0.1419
	(0,0)	4.3429	1.0000
EDU	(C,T)	-3.1783	0.1036
	(C,0)	-3.1499	0.0310
	(0,0)	0.1255	0.7167
PAI	(C,T)	-4.6906	0.0028
	(C,0)	-4.7521	0.0004
	(0,0)	-1.9236	0.0529

Source: Author's computation

Table 2. OLS estimation of all variables

Dependent Variable: Y

Method: Least Squares

Date: 10/30/16 Time: 20:59

Sample: 1973 2013

Included observations: 41

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGPC	-10.35768	0.895242	-11.56970	0.0000
EDU	-5.866138	1.559570	-3.761382	0.0006
PAI	0.204840	0.088220	2.321912	0.0258
C	99.61917	5.839163	17.06052	0.0000
R-squared	0.848010	Mean dependent var		24.92463

Adjusted R-squared	0.835686	S.D. dependent var	7.889519
S.E. of regression	3.198067	Akaike info criterion	5.255438
Sum squared resid	378.4225	Schwarz criterion	5.422616
Log likelihood	-103.7365	Hannan-Quinn criter.	5.316315
F-statistic	68.81219	Durbin-Watson stat	0.705306
Prob(F-statistic)	0.000000		

Source: Authors' computation

According to estimation of model by using OLS method the results gives prove of the actual evidence of theoretical foundation. The results in the above Table 2 reveals that the value of R square is .84 which means that 84 percent variation in dependent variable (poverty) is explained by the independent variable (education, economic growth, inflation). The results also prove that the independent variable except inflation has negative and significant effect on poverty. Such as the coefficient of economic growth indicates that economic growth has significant and negative effect on poverty. A 1000 Pakistani rupees increase in per capita income decreases the percentage of people living below the poverty line by 10.3 percent. The impact of education is measured by the total percentage GDP of government expenditure on education. It implies that, rise in government expenditure on education as a percentage of GDP leads to lower down the percentage of people living below the poverty line. A 1 percent increase in government expenditure on education as percentage of GDP will reduce the poverty level by 5.8 percent. While inflation has positively influenced on poverty and significant at the 1 percent level. Ceteris paribus, one percentage increase in consumer price index is expected to raise head count ratio of poverty by .20 percent. Inflation lowers down the purchasing power of the people and reduce their real income, as a result more and more people falls below the poverty line. According to estimation the value of R-square is 0.84 which means that 84 percent variation in dependent variable (poverty) is explained by the

independent variable (education, economic growth, inflation). At 5 percent level of significance the F statistics shows that model is useful in determining the influence of economic growth, education and inflation on poverty reduction.

Conclusion:-

The eradication of poverty and inequality and meeting of basic needs are the primary goals for any country. However, achieving a reduction in poverty is fundamental challenge in Pakistan. The growing literature on policies on poverty reduction has emphasized on the importance of education and economic growth. Education and economic growth is seen as a veritable tool for the socio political and economic emancipation of any country from the shackles of poverty. Education promotes not only economic development, but productivity, and generates individual per capita income. The per capita income decrease poverty by leading to increase employment and high real wages. On the other hand inflation hurt the poor people because it lowers the purchasing power of the poor people which leads the people toward poverty. High price of food and high food inflation bring miserable sufferings for the people specially those who have no or little income. The present research work explores the linkage and causal nexus between education, poverty, economic growth and poverty. It depicts that education and economic growth has negative but significant effect on poverty when the people will more educate they will more participate in work force that will enhance the economic growth of the country. The increase in economic growth will lower the poverty of a country. Moreover, Inflation has positive and significant effect on poverty. When inflation will increase it will increase the poverty in a country. In the light of this empirical results government should take proper safety measures to anticipated positive impact of inflation. By controlling inflation rate and increasing economic growth and education the poverty can be reduced in Pakistan.

References:-

Abdul-Hakim, R., Abdul-Razak, N. A., & Ismail, R. (2010). Does social capital reduce poverty? A case study of rural households in Terengganu, Malaysia. European Journal of Social Sciences, 14(4), 556-566.

Afzal, M., Farooq, M. S., Ahmad, H. K., Begum, I & Quddus, M. A. (2010). Relationship between school education and economic growth in Pakistan: ARDL bounds testing approach to cointegration. *Pakistan Economic and Social Review, 1(*48) 39-60

Agenor, Pierre-Richard (1998). "Stabilization Policies, Poverty, and the Labour Market." Manuscript, International Monetary Fund and the World Bank

Azzoni, C., J. Guilhoto., E. Haddad., T. Manenez., F. Silveira., 2004. Commodity Price Changes and Their Impacts on Poverty in Developing Countries: the Brazilian Case.

Balakrishnan, R., Steinberg, C. & Syed, M. (2013). The elusive quest for inclusive growth: Growth, poverty, and inequality in Asia. (IMF Working Paper). Washington, DC: International Monetary Fund. Retrieved from https://www.imf.org/external/pubs/ft/wp/2013/wp13152.pdf

Blank, R. M. and Blinder, Alan S. (1985). Macroeconomics, Income Distribution, and Poverty. *NBER Working Paper* No.1567. Cambridge, MA.

Braumann, B. (2004). High Inflation and Real Wages. *IMF Staff Papers*, Vol. 51, No. 1, International Monetary Fund. Washington, D.C.

Bourguignon, F. (2005). Equity and Economic Growth: Permanent questions and charging Answers, prepared for Human Development Report, UNDP.

Bourguignon, François (2004): "The Poverty-Growth-Inequality Triangle", Indian Council for Research on International Economic Relations Working Paper #125.

Birdsall, N. (2003) Social Development in Economic Development. World Bank Policy research working papers, WPS 1123, Washington DC

Bruno, M. & Easterly, W. (1998). Inflation crises and long-run growth. *Journal of*

Monetary Economics, *41*, 3 - 26

Chaudhary, T. T. and Chaudhary, A. A. (2008). The Effects of Rising Food and Fuel Costs on Poverty in Pakistan. *The Lahore Journal of Economics*, Special Edition (September). Lahore, Pakistan. pp. 117-138.

Choi, Sangmok, Bruce D. Smith and John H. Boyd, 1996. Inflation, Financial Markets and Capital Formation. Proceedings, Federal Reserve Bank of St. Louis, pp: 9-35

Cardoso, Eliana. "Inflation and Poverty." National Bureau of Economic Research Working Paper No. 4006 (March 1992).

Cutler, David M. and Lawrence Katz. "Macroeconomic Performance and the Disadvantaged." *Brookings Papers on Economic Activity*, 2 (1991).

Chaudhary, M.; Ahmad, N., 1995. Money Supply, Deficit and Inflation in Pakistan, Pakistan Development Review, 34: 945-956.

De Janvry, A., & Sadoulet, E. (2010). Agricultural growth and poverty reduction: Additional evidence. The World Bank Research Observer, 25(1), 1-20. doi: 10.1093/wbro/lkp015 Roemer, M., & Gugerty, M. K. (1997). Does economic growth reduce poverty? CAER II, 499

Duclos, J., Abdelkarim Araar, John Giles (2010), Chronic and transient poverty: measurement and estimation, with evidence from China. *Journal of Development Economics*. Vol. 91: 266-277.

Fischer, Stanley (1993). "The Role of Macroeconomic Factors in Growth." Journal of Monetary Economics, (December) 32(3), 485-512.

Islam, T. S., Wadud, M. A. & Islam, Q. B. T. (2007). Relationship between education and GDP growth: A multivariate causality analysis for Bangladesh. *Economics Bulletin*, *3*(35), 1-7.

Jamison, D. and Moock, P. (2004). Farmer Education and Farmer Efficiency in the Nepal: The Role of Schooling. World Development 42 (3), 205-218

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

J.Muhammad, C.Rizwana (2007) poverty allevation a critical analysis of causes and

remedies 2001-2005. Journal of management and social science vol.3, No1.

Krueger, A. B. & Maleckova, J. (2003). Education, poverty and terrorism: Is there a causal connection? *Journal of Economic Perspectives*, *4*(17), 119–144.

Kakwani N. and M. Krongkaew (2000), Introduction: Economic growth, poverty and income inequality in the Asia-Pacific region, Journal of the Asia Pacific Economy 5(1/2), 9-13

Lucas, R. E. (1988). On the mechanics of economic development. *Journal of Monetary Economics*, *22*, 3-42.

McKay, A. 2013. 'Growth and Poverty Reduction in Africa in the Last Two Decades: Evidence from an aerc Growth-Poverty Project and Beyond.' *Journal of African Economies* 22 (s1): i49–i76

Mubarik, Y. A. (2005). Inflation and growth: An estimate of the threshold level of inflation in Pakistan. *State Bank of Pakistan – Research Bulletin*, *1* (1-2), 35-

Norton, S. W. (2010). Human capital, institutions and world poverty. Paper presented at Western Economics Association, International Meeting, July 2004, Vancouver, B.C.

Nouve, K. and Q. Wodon. 2008. "Impact of Rising Rice Prices and Policy Responses in Mali: Simulation with a Dynamic CGE Model". *World Bank Policy Research Working Paper* No. 4739.

Ozturk, S.K. (2011). Investment in human capital. American Economic Review, 51 (1), 334-342.

Okoroafor,M.O., andN.Chinweoke. 2013. 'Poverty and Economic Growth in Nigeria 1990–2011.' *The Macrotheme Review* 2 (6): 105–15.

Psacharopoulos, G. (1998). Returns to investment in Education: A global Update. World Development, 22 (9), 101-110.

Powers, Elizabeth T. "Inflation, Unemployment, and Poverty Revisited." *Economic Review*, Federal Reserve Bank of Cleveland (Quarter 3 1995), 2-13

Romer, Christina and David Romer. "Monetary Policy and the Well-Being of the Poor." NBER Working Paper 6793 (November 1998).Rose

Ravallion, M. (1998). Reform, Food Prices and Poverty in India. *Economic and Political Weekly*, Mumbai, India.

Rashid, A.; Kemal, A., 1997. Macroeconomic Policies and their impact on Poverty alleviation in Pakistan, The Pakistan Development Review, 36:1 39-68.

Sachs, J.D. (2009) The end of poverty, Economic Possibilities of our time. New York: The Penguin Press.

Sabir, H. M., Hussain, Z. & Saboor, A. (2006). Determinants of small farmers poverty in the Central Punjab (Pakistan). *Journal of Agriculture and Social Sciences, 1*(2). Sen, A. (1999). Development as freedom. Oxford University Press, Oxford

Krueger, A. B. & Maleckova, J. (2003). Education, poverty and terrorism: Is there a causal connection? *Journal of Economic Perspectives*, *4*(17), 119–144.

Todaro,M. P., 1997. *EconomicDevelopment.* Reading, ma:Addison-Wesley.

Tilak, J B G (1994) Education for Development in Asia. New Delhi: Sage Publications.

UNDP (2010) Progress Against Poverty in Africa. New York. UNDP.

United Nations. 2014. *Millennium Development Goals Beyond 2015.* New York: United Nations

Wieser, C. (2011). Determinants of the growth elasticity of poverty reduction: Why the impact on poverty reduction is large in some developing countries and small in others. Paper presented at the 15th Annual Conference on Global Economic Analysis, Geneva, Switzerland. Retrieved from www.gtap.agecon.purdue.edu

World Bank (2006) Summary of Key Findings and Recommendation for Pakistan: Poverty, 2004-05. Islamabad

World Bank, 2008b, Poverty data: a supplement to the World Development Indicators 2008, Washington, DC. The World Bank

Yousaf, H. and Ali, I. (2014). Determinants of Poverty in Pakistan. International Journal of Economics and Empirical Research. 2(5), 191-202