Pak J Commer Soc Sci
Pakistan Journal of Commerce and Social Sciences
2013, Vol. 7 (1), 141-156

Impact of Fiscal Autonomy on Poverty in Pakistan

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Abstract

Pakistan is an underdeveloped state with strong central government. At present there are three levels of government functioning in Pakistan i.e. the federal, provincial and the local. Due to the competence and distributional aspects, the resource allocation method always remained under discussion. Therefore, the present study focused on the role of fiscal autonomy in reducing poverty in Pakistan. Both expenditure and revenue indicators of fiscal policy are considered in this study. For the purpose of analysis, time series annual data from FY1972 to FY2010 is used. Ordinary least square technique is applied to estimate the effect of fiscal autonomy on poverty. The study concludes that the central government should transfer fiscal powers to lower tiers of government in order to reduce poverty in Pakistan.

Keywords: Fiscal autonomy, head count ratio (HCR), ratio of provincial expenditure, ratio of provincial revenue.

1. Introduction

Poverty is becoming the common problem in most of the developing countries especially located in South Asian regions. The previous century has showed a rapid advancement in human history as many people came out of poverty trap and recorded global prosperity. The reason behind these achievements is the integration of economies due to their low transportation costs, reduction in trade barriers, capital flows among economies and a rapid transfer of ideas. Poverty is about the deprivation in many aspects of human life such as lack of hygienic food, pure water, sanitation facilities, housing, health services, employment, and powerlessness and so on. The human development report (2010) shows that Pakistan is one of those 10 countries which have made improvements in their HDI ranks. Although Pakistan has made progress in last three decades in reducing poverty and making economic development yet a large part of the population is facing the problem of severe poverty.

Poverty is considered a complex issue in South Asian countries like Pakistan. Population is growing day by day and it has exceeded approximately 170 million people. Pakistan now has become sixth most populous country in the world. In Pakistan approximately 24 percent people are living below the poverty line. Rapid growth of population, higher inflation, and inequalities in the distribution of income are the major causes of poverty. As it is observed that the central government has failed in the policy formulation and its implementation for eradicating poverty, therefore, the present study analyzes the effects of fiscal autonomy on poverty reduction.

In general, autonomy means having freedom or independence in doing any sort of act. In this study autonomy refers to the delegation of decision making powers to lower levels of government, so that they can make independent decisions. Decentralization is the same case, therefore, has been used alternatively in this study. Decentralization is a very confusing term. In general, it refers to any process by which central government shifts the decision making authority at lower level. There are various forms of decentralization and a clear difference among them may be observed. Administrative, political, economic, and fiscal decentralization are the main forms of decentralization.

Administrative decentralization is the hierarchical and functional shifting of executive powers between different levels of government. In case of political decentralization, citizens or their elected representatives are given increased authority in political judgment at the local level. In Economic decentralization, some functions are shifted from public sector to private sector, while fiscal decentralization indicates the shifting of expenditure and revenue at the local government level.

The concept of fiscal decentralization is now widespread. It is a process of delegating financial responsibilities like tax collection, spending and correcting imbalances between resources and obligations to the lower tiers of government. Akai and Sakata (2002) defined fiscal decentralization as the shifting of decision making authority to the local governments. Thiessen (2001) argued that fiscal decentralization is the transfer of responsibility to local governments regarding collection of tax revenues and decision about spending within the legal criteria. Many countries are practicing fiscal decentralization. Therefore, it is important to estimate its effects on economic welfare.

Fiscal decentralization may increases economic effectiveness because local governments have improved awareness of local situation and preferences in the provision of public goods than national government. In addition, fiscal decentralization enhances competition among different levels of government resulting in a better production of public goods under revenue constraints. In few cases, fiscal decentralization may be injurious due to corruption of local politicians, lack of effective public expenditure management system, and, fiscal policy coordination problems.

The basic purpose of this study is to evaluate the role of fiscal autonomy in reducing poverty in Pakistan. The rest of the paper is arranged as follows: section II provides a review of previous studies, section III discusses the data sources and methodology used in the study, trends in fiscal allocation between central and provincial governments and Head Count Ratio are highlighted in the section IV, section V provides the results, analysis and discussion, and section VI gives the conclusion and policy recommendations.

2. Literature Review

Even though fiscal decentralization and poverty have been under extensive academic research and political debate hence these two concepts are very broad and complex, and there is no consensus about their precise meaning and proper measurement. A large quantity of literature is available on fiscal decentralization that shows its impact on different economic factors. Similarly, a lot of work has been done on the issue of poverty, and many dimensions have been explored regarding it. Few, important studies, have been reviewed as under:

The first study on poverty in Pakistan was carried out by Naseem (1973), who randomly selected two poverty lines based on per capita annual expenditures. With the help of these poverty lines, he examined the incidence of poverty in Pakistan for the period 1963-64 and 1969-70. This study concluded that percentage of poor population decreased significantly in urban areas due to the process of economic growth while in rural areas there were no significant effects on poverty. In a later study Naseem (1977) gave the concept of nutrition for defining poverty line. Allaudin (1975) further extended the work of Naseem by using per capita annual income as criterion for defining poverty line arbitrarily. But the results were in accordance with Naseem's study.

Later on, work of Naseem and Allaudin was criticized by Mujahid (1978) by exploring that poverty line defined with the help of per capita expenditure could be misleading because variations in household size were neglected, while by considering this aspect of family size the poverty situation could be reversed. Malik (1992) contributed to the work on poverty by using a test statistic which was developed by Khakwani (1990). With the help of this statistic, he estimated the differences in Head count measures. Apart from these studies, a large number of studies are available on poverty and its related issues. Some of these studies include Wasay (1977), Akhter (1988), Ahmad (1993), Amjad and Kamal (1997), Jafri (1997), Quershi and Arif (2001) and Chaudhry et al (2006, 2009, 2010, 2012). These studies contributed a lot in understanding the concept of poverty and issues related to its measurement in Pakistan.

Ali (1995) studied the incidence of poverty in Pakistan and methods to determine the poverty line. He used the basic needs approach and incorporated the extended linear expenditure system to estimate the poverty line while Bourguignon, et.al (2002) evaluated the performance of various economic policies in reducing poverty and explored the ways for possible improvements in the economy.

Steiner (2005) contributed to evaluate the impact of decentralization on poverty. This study argued that decentralization could influence poverty by assigning expenditure as well as tax raising power to local governments. He took the case study of Uganda and concluded that decentralization leads to reduction in poverty.

Skira (2006) collected data for 200 countries for five years interval beginning from 1965 to 2000 including figures for 2004 also. He explored the impact of fiscal decentralization on poverty, education, output, and health. The study concluded that local government can play a pivotal role in poverty reduction strategies.

Ravallion (2007) studied, whether fiscal decentralization is helpful in anti-poverty program or not. He used data from urban household short survey (UHSS) for 2003-04 by taking sample from 35 largest cities having a total sample of 7600 households. He argued

that if greater attention is given to the costs of decentralization then local governments may be helpful in poverty reduction.

Yao (2007) evaluated the impact of decentralization on poverty reduction and explored the transmission process of the effects of fiscal decentralization on poverty through education, agricultural productivity and health care facilities. He observed a significant but non linear relationship and argued that decentralization helps to reduce poverty.

Malik (2008) analyzed the challenges and policy issues of decentralization in Asian countries. He argued that fiscal decentralization is expected to have a positive effect on poverty reduction through increased efficiency, better targeting of services and greater responsiveness of local needs. But there are some costs associated with this strategy. He concluded that through better governance at local level, fiscal decentralization can be helpful in reducing poverty.

Nguyen and Phuong (2008) evaluated the impact of decentralized public expenditure on poverty alleviation. They employed data for 2002 and 2004 for Vietnam. Average monthly income was the dependent variable and control variables included log of provincial expenditures, provincial capacity indicators, and structural characteristics. The estimation results showed that higher degree of fiscal decentralization lead to a reduction in poverty.

Sepulveda (2010) discussed the impact of fiscal decentralization on poverty reduction and correcting imbalances in income distribution. This study was conducted by taking data from large number of countries for the period 1971 to 2000 and concluded that decentralization is helpful in reducing poverty and income inequalities until the share of local expenses is less than one third of total government expenditure.

Although much work has been done on poverty yet a few studies focused on the role of fiscal decentralization in poverty reduction in Pakistan. Therefore, this study is conducted to fill the gap in the literature.

3. Data and Methodology

The data sources, measurement issues, description of the variables with hypothetical signs, and methodological issues are discussed as under:

3.1 Data Sources

The study is concerned with some of most important macroeconomic variables that include Fiscal autonomy and poverty. This study evaluates the effects of delegating fiscal powers to the local governments on poverty in Pakistan. To conduct this research in an efficient way and to reach some conclusions, a reliable dataset was required. The present study is based on secondary source of time series annual data of Pakistan. The sample is for the period FY1972- FY2010. The period was selected specifically because this is the period for which data were available for the selected variables. Data have been obtained from The Handbook of statistics on Pakistan economy (2005), various issues of The Pakistan Economic Survey, and Fifty years Statistics of Pakistan's Economy published by the State Bank of Pakistan (SBP).

3.2 Construction of Variables

Head Count Ratio (HCR) is used as dependent variable to evaluate the impact of fiscal autonomy on poverty. Along with core variables of decentralization, some other explanatory variables are incorporated in study, assumed signs of these variables and their method of construction is interpreted below:

Head count Ratio (HCR)

Head count ratio is used as the measure of poverty. It is the ratio of headcount of those persons whose income fall below an absolute poverty line to the total population. Suppose there is n population of a country and q are the persons whose income is less than the poverty threshold. The headcount ratio Po can be represented as follows:

$$P_0 = \frac{q}{n}$$

HCR which provides the poverty incidence is not measured directly. We have employed some available sources. The main source of incidence of poverty is Malik (1988) especially for the period 1963-64 to 1984-85. He used consumption poverty line, 2550 calories per day and the ratio of food to non-food consumption of poor. In order to adjust for the age and gender considerations, he also employed adult equivalence scales. After that the same methodology has been employed by Amjad and Kemal (1997) and Jamal (2003) and generated a consistent time series of incidence of poverty for the years 1987-88,1990-91 and 1992-93; and 1996-97, 1998-99 and 2001-02 respectively. Their estimates of poverty based on household income and expenditure and Pakistan integrated household surveys. These poverty estimates were compared with the estimates of Federal Bureau of Statistics (2001). The current estimates regarding incidence of poverty are taken from Pakistan Economic survey (different issues), considering the same poverty line.

Fiscal Autonomy (FATM)

In order to capture the impact of fiscal autonomy, we have introduced four proxies i.e.

- Ratio of Provincial Expenditure
- Ratio of Provincial Revenue
- Adjusted Provincial Expenditure
- Adjusted Provincial Revenue

Ratio of Provincial Expenditure (RPEX)

It is the ratio of sub-national government expenditure to total government expenditure. It is a straight forward measure of fiscal autonomy. Theoretically, it is expected that ratio of provincial expenditure will be helpful in reducing poverty in Pakistan.

Ratio of Provincial Revenue (RPRV)

It is another measure of fiscal decentralization and obtained by taking the ratio of sub-national government revenue to total government revenues. Its expected coefficient is negative for poverty models which show that fiscal autonomy will reduce poverty.

Adjusted Provincial Expenditure (APEX)

The study also incorporates adjusted provincial expenditure instead of the ratio of provincial expenditure in order to have full effect of fiscal autonomy on poverty. It is the ratio of sub-national government expenditure to total government expenditure less defense expenditure and payment of interest on debts. It is expected that adjusted ratio of provincial expenditure has positive impact on poverty reduction.

Adjusted Provincial Revenue (APRV)

Similarly, we have introduced adjusted provincial revenue in our model. It is the ratio of sub-national government revenues less grants in aid to total government revenues and is expected to have negative effect on poverty reduction.

Apart from these core variables, we have added some control variables for examining their impact on poverty.

Trade Openness (OPEN)

Trade openness is a very important variable for reducing poverty. It is measured by the total amount of foreign trade or expressed as the ratio of the sum of exports and imports divided by gross domestic product. Trade openness may be beneficial or harmful for economy but, in this study, it is expected that increase in openness will accelerate growth and helps in poverty reduction.

Inflation Rate (INFR)

It is expected that impact of inflation on poverty may be positive or negative. We have used consumer price index as proxy for inflation rate in the present study.

Employed Labor Force (EMLF)

It is the proportion of total number of employed persons to the total number of persons in the labor force. It is expected that increase in employed labor force will reduce poverty, therefore, sign of its coefficient may be negative.

Literacy Rate (LITR)

Literacy is the ability of a person who can read a newspaper and write a simple letter in any language (1998 census). The literacy rate is the percentage of people with the ability to read and write. Theoretically, it is hypothesized that higher literacy rate leads to a reduction in poverty.

Gross Fixed Capital Formation (GFCF)

Gross fixed capital formation is a measure of gross net investment in fixed capital assets by households, government and enterprises inside the home economy, throughout an accounting period such as a quarter or a year. GFCF is a component of the expenditure on GDP. It shows how much of the new value added is invested in the economy rather than consumed. It is expected that increase in gross fixed capital formation helps to reduce the poverty.

Fertility Rate (FRTR)

It is the ratio of live births to the total population of that area and it is expressed per thousand of population per year. Expected sign of fertility rate may be positive or negative. A negative sign may help to reduce the poverty.

3.3 Model Specification

In the present study, we have specified two models regarding poverty. These models incorporate fiscal autonomy or decentralization variables, and some other poverty related variables, which are expected to have a significant impact on poverty. We are considering both the revenue and expenditure measures of fiscal decentralization simultaneously. Multivariable Model, used for the empirical analysis, is given as:

$$HCR = f\ (EMLF, GFCF, INFR, OPEN, LITR, FRTR, FATM)$$

$$HCR = \alpha_0 + \alpha_1 EMLF + \alpha_2 GFCF + \alpha_3 INFR + \alpha_4 OPEN + \alpha_5 LITR + \alpha_6 FRTR + \alpha_7 RPEX + \alpha_8 RPRV + \upsilon \quad \text{---------- (Model: 1)}$$

$$HCR = \beta_0 + \beta_1 EMLF + \beta_2 GFCF + \beta_3 INFR + \beta_4 OPEN + \beta_5 LITR + \beta_6 FRTR + \beta_7 APEX + \beta_8 APRV + \varepsilon \quad \text{---------- (Model: 2)}$$

These two equations are different with respect to fiscal autonomy variables. In first equation we have observed the impact of ratio of provincial expenditure and ratio of provincial revenue on head count ratio, whereas, in the second model we have taken adjusted ratios of provincial government revenue and expenditure. Where head count ratio (HCR) is taken as a dependant variable as a measure of poverty, fiscal autonomy variables like RPEX, RPRV, APEX AND APRV are taken as core variables while there are some other control variables like EMLF, GFCF, INFR, OPEN, FRTR and LITR. α_0 and β_0 are intercepts and others are slope coefficients. In models υ and ε are the error terms, which are assumed to be normally distributed and follow the assumptions of OLS. Simple OLS technique is used for the estimation of the parameters.

4. Trends in Fiscal allocation between the central and provincial government and Head Count Ration in Pakistan

Pakistan has observed many periods of economic prosperity and depression since its establishment (August 1947). There are two main fiscal policy measures i.e. expenditure and revenue, these measures also showed sudden fluctuations due to various reasons. Head Count Ratio is taken as a proxy for measuring the incidence of poverty in this study and also showed continuous fluctuations in its behavior. This section will show the trends in these two measures.

4.1 Trends in ratio of provincial and Federal Expenditure

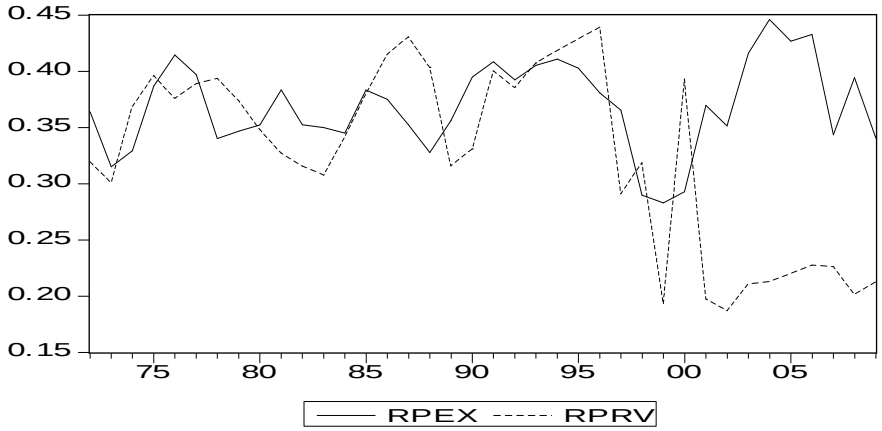

Figure 1: Ratio of provincial and Federal Revenue and Expenditure

Source: Economic survey of Pakistan (various issues)

Ratio of provincial and federal expenditure and revenue shows continuous fluctuations in their pattern from 1972 to 2010. In 1972 the provincial government had 0.36 percent of total federal government expenditure, which increased gradually and reached 0.42 percent by 1976. Then share of provincial government expenditure started decreasing and reached 0.33 percent by 1988. It started rising smoothly in coming years till 1995. Afterwards, it fell sharply to 0.27 percent in 2000. After that fall, provincial share in expenditure started rising and reached its peak, 0.45 percent in 2004, after which it again shown a falling trend.

Ratio of provincial government revenue in total federal government revenue was less fluctuating as compared to ratio of provincial expenditure in total federal government expenditure. In 1972 this ratio was 0.32 percent, and then it starts rising gradually. It started falling from 1979. It dropped to 0.31 percent in 1984. Then it rose sharply till 1986, and again remained falling till 1989 and reached 0.29 percent. The ratio of provincial revenue in total federal government revenue shows sudden fluctuations in 1999-2000. It fell sharply from 0.31 percent in 1998 to .20 percent in 1999, and then rose to 0.36 percent in 2000. It fell severely again in 2001 and reached 0.20 percent. Afterwards it showed a stable trend.

4.2 Trends in Head Count Ratio

Head count Ratio, which is the most common measure used for poverty, showed more or less stable fluctuations over the period of time. It showed that almost 0.40 percent of the population was living below the poverty line in 1972. This ratio showed a gradual fall till 1986 and touched almost 16 percent. Then it showed a more or less gradual increase and reached its peak, 35 percent, in 2000, and then depicted a falling trend.

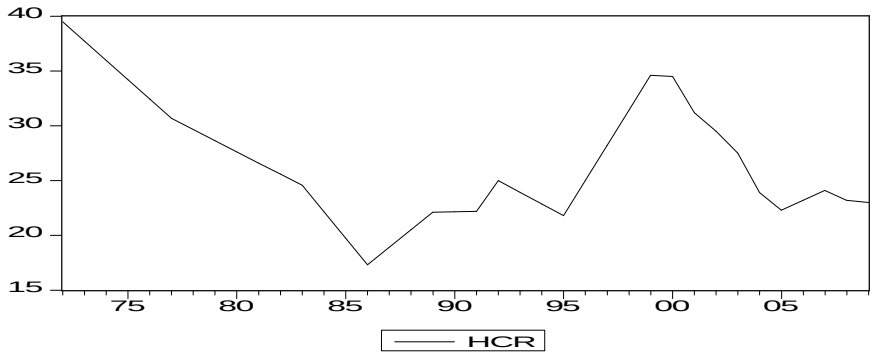

Figure 2: Head Count Ratio

Source: Economic survey of Pakistan (various issues)

A fall in the value of HCR is in favour of the economy because it shows that the economy is moving in appositive direction. The fall in poverty is due to the improvement of various economic factors like better allocation and utilization of resources, equal distribution of income, better functioning of markets, health facilities, and better institutional facilities etc.

5. Estimation Analysis

The theoretical model has been discussed in the previous section. We have tested these models empirically and resolved the econometric problems of these models. We have discussed the statistical results of this study, which represents the descriptive properties and association between the variables. Finally, we have interpreted the empirical results of the study.

5.1 Statistical Analysis

In statistical analysis, we have elaborated the descriptive statistic and correlation matrix of some selected explanatory variables for this study. Table 1 reports the descriptive analysis on some selected variables used in this study. The average values for ratio of provincial expenditure and adjusted ratio of provincial expenditure are 0.367 and 1.062 for our period of analysis with variation of 0.039 and 0.353 respectively, while average values for ratio of provincial revenue and adjusted ratio for provincial revenue are 0.325 and 0.342 with 0.081 and 0.094 variations respectively.

On the average employed labor force is 30.91 with 8.205 variation in it. On the other hand fertility rate is 5.723 on the average. Similarly, the average values for gross fixed capital formation, inflation rate, trade openness and literacy rate are 428079.6, 59.77, 0.016 and 36.91 respectively and the values of standard deviation are 590783.7, 48.01, 0.009 and 12.51 respectively. If we consider the skewness of all these selected variables then we can observe that almost all variables are little bit skewed. Fertility rate, ratio of provincial expenditure, ratio of provincial revenue and adjusted ratio for provincial revenue are negatively skewed while all other variables are positively skewed.

Table 1: Descriptive Statistics

Variables	Mean	Std. Deviation	Skewness	Kurtosis
APEX	1.062	0.353	0.722	2.365
APRV	0.342	0.094	-0.293	1.873
RPEX	0.367	0.039	-0.246	2.589
RPRV	0.325	0.081	-0.442	1.816
EMLF	30.91	8.205	0.266	2.021
FRTR	5.723	1.204	-0.443	1.561
GFCF	428079.6	590783.7	1.844	5.441
INFR	59.77	48.01	0.913	2.957
OPEN	0.016	0.009	0.215	1.720
LITR	36.91	12.51	0.228	1.675

Source: Authors' calculations based on software, E-Views 3.1

The values of kurtosis indicate that the variable like GFCF has a high peak or leptokurtic distribution while EMLF, FRTR, OPEN, LITR, APEX, APRV RPEX and RPRV are low peaked or platykurtic but INFR is approximately normally distributed or mesokurtic.

Table 2 explains results of correlation matrix indicating that APRV is strongly correlated with RPRV, EMLF is strongly correlated with FRTR, INFR and LITR. FRTR is strongly correlated with LITR, OPEN, INFR and EMLF while moderately with APRV. GFCF is highly correlated with EMLF, FRTR, INFR and LITR and INFR are highly correlated with EMLF, FRTR, GFCF and LITR while OPEN is strongly correlated with EMLF, FRTR, GFCF and INFR.

Table 2: Correlation Matrix

	APEX	APRV	EMLF	FRTR	GFCF	INFR	RPEX	RPRV	OPEN	LITR
APEX	1									
APRV	0.17	1								
EMLF	-0.03	-0.65	1							
FRTR	-0.008	0.74	-0.94	1						
GFCF	-0.27	-0.67	0.85	-0.84	1					
INFR	-0.11	-0.71	0.96	-0.95	0.94	1				
RPEX	0.24	-0.03	0.17	-0.12	0.15	0.11	1			
RPRV	0.28	0.68	-0.63	0.70	-0.66	-0.69	-0.01	1		
OPEN	-0.16	0.55	-0.93	0.91	-0.73	-0.88	-0.12	0.52	1	
LITR	0.03	-0.66	0.98	-0.96	0.84	0.96	0.16	-0.64	-0.94	1

Source: Authors' calculations based on software, E-Views 3.1

Similarly LITR is highly correlated with most of the variables. The core variable RPEX is weakly correlated with all other variables and RPRV is strongly correlated with APRV while moderately correlated with all other explanatory variables. The diagonal structure, given above, shows the pair wise correlation of variable with itself.

5.2 Empirical Analysis

In this study, for the sake of estimation, we applied OLS regression technique to analyze the impact of fiscal autonomy on poverty. To analyze this relationship we used two models, which are differentiated with respect to core variables. Head count ratio as a proxy for measuring poverty is taken as dependent variable. Table 3 reports the estimation results of both models. The explanatory power of the models is explained by the value of R^2 and adjusted R^2. The values of adjusted R^2 in both models are 0.91 and 0.88 respectively, which indicate that models are good fitted. The overall significance of the models are judged by the highly significant values of F-statistic. We have found that our poverty models are not facing the problems of autocorrelation because the values of Durbin Watson d-statistic are 2.03 and 1.9 respectively. In addition the danger of multicollinearity is ruled out because all the t-statistics are almost significant and the values of R^2 or coefficients of determination are not approximately equal to one. So the results of the study are in accordance with statistical and econometric criteria.

Table 3: OLS Results with Head Count Ratio as Dependent variable

Variables	Model 1			Model 2		
	Coefficient	**Std. Error**	**t-stat**	**Coefficient**	**Std. Error**	**t-stat**
C	166.7*	10.38	16.05	161.5*	11.54	13.98
EMLF	-1.363*	0.296	-4.59	-1.335*	0.354	-3.762
GFCF	-3.18E-06	2.22E-06	-1.42	-5.49E-06*	2.33E-06	-2.352
INFR	0.089	0.058	1.53	0.155*	0.059	2.631
OPEN	-71.34	101.37	-0.71	-127.7	118.01	-1.082
LITR	-0.605*	0.258	-2.33	-0.813*	0.2964	-2.749
FRTR	-11.57*	1.316	-8.79	-11.18*	1.494	-7.479
RPEX	-23.39*	8.12	-2.87	---	---	---
RPRV	-10.82**	5.38	-2.00	---	---	---
APEX	---	---	---	-0.103	1.195	0.086
APRV	---	---	---	-13.25*	5.567	-2.380
R-Squared	0.93			0.91		
Adj. R Sq.	0.91			0.88		
D-W Stat	2.03			1.87		
F- Statistic	45.01			35.65		
Prob (F-Stat)	0.000			0.000		

Source: Authors' calculations based on software, E-Views 3.1

Note: *, **, *** indicate that parameters are significant at 1 percent, 5 percent and 10 percent level respectively

The coefficient of fiscal autonomy variables i.e. ratio of provincial expenditure (RPEX), ratio of provincial revenue (RPRV), and adjusted provincial revenue (APRV) are negative and highly significant at one percent level, which means that the fiscal autonomy reduces poverty, because fiscal autonomy or decentralization leads to increased competence, better targeting of services and greater sensitivity to local desires. Through decentralization of fiscal power local governments have more check and balance on the institutions, which leads to more production and employment opportunities and reduction of poverty. The results of our study support the arguments of Skira (2006) and Malik (2008) that fiscal decentralization leads to decline in poverty.

We have found that the coefficients of employed labor force (EMLF) and gross fixed capital formation are negative and highly significant in both models. Both variables are taken as proxies for labor and capital in our study. The Neo-Classical production function depends upon labor and capital. When more workers are given employment opportunities with increased amount of capital, per worker output and income increases, and poverty decreases. The coefficient of inflation rate is positive and almost significant. This indicates that consumer's purchasing power falls as the prices of the goods and services rise. The people become poorer and are unable to maintain their standard of living.

We have also observed in the present study that the coefficient of trade openness (OPEN), literacy rate (LITR), and fertility rate are negative and are statistically significant at 1 percent level except trade openness. The higher trade openness results in the higher economic growth, and lower poverty level. Literacy rate is the core indicator of human capital formation. Our analysis concludes that improvement in education reduces the poverty. Return on education may increase due to increase in the level of education.

Finally, we have noted that the coefficient of fertility rate (FRTR) is negative and statistically significant. This indicates that an increase in fertility rate leads to decline in poverty, because in developing countries, people consider their children as capital good or moderately as economic investment goods, as there is an expected return in the form of both child labor and the provision of financial support for parents in old age. Neo-classical Microeconomic theory of fertility supports these arguments and Simon Kuznets in his empirical study also found the similar behavior of people. Hence, with the help of empirical results, we are able to conclude that more fiscal autonomy or decentralization will lead to reduction in poverty in Pakistan.

5.3 Diagnostic Tests

In order to examine the validity of the assumptions of Heteroskedasticity, serial correlation, normality and model specification or functional form, we have used the diagnostic tests for both models. The results of these tests are reported in the table 4 and 5 respectively.

Table 4: Diagnostic Statistics for Model 1

Normality Test	Jarque – Bera	J. B. Statistics: 1.33	Probability: 0.51
Serial Correlation	Breusch – Godfrey Serial Correlation LM Test	F – Statistics: 0.20	Probability: 0.81
Heteroskedasticity	Autoregressive Conditional Heteroskedasticity test	F – Statistics: 2.37	Probability: 0.13
Model Specification/ Functional Form	Ramsey RESET Test	F – Statistics: 0.40	Probability: 0.53

Table 5: Diagnostic Statistics for Model 2

Normality Test	Jarque – Bera	J. B. Statistics: 0.46	Probability: 0.79
Serial Correlation	Breusch – Godfrey Serial Correlation LM Test	F – Statistics: 0.29	Probability: 0.74
Heteroskedasticity	Autoregressive Conditional Heteroskedasticity test	F – Statistics: 0.66	Probability: 0.42
Model Specification/ Functional Form	Ramsey RESET Test	F – Statistics: 1.42	Probability: 0.24

The findings of the tests indicate that the estimated models fulfill the assumptions of OLS method. We accept the hypothesis that residuals obtained from the both models are normally distributed based on the values of J.B. tests. The problem of serial correlation is examined by LM test and result rule out the serial correlation problem. There is no problem of autoregressive conditional heteroscedasticity. We have used Ramsey's RESET test to examine the functional form or model specification of the models. The results show that the models are correctly specified.

6. Conclusion and Policy Recommendations

We have evaluated the impact of fiscal autonomy on poverty in Pakistan. A large number of studies are reviewed, which have mixed conclusions because of different measures of fiscal autonomy. The present study has used both fiscal measures i.e. expenditure autonomy and revenue autonomy.

We conclude that provincial autonomy in expenditure and revenue is useful in reducing poverty. The findings show that the ratios of provincial expenditure and provincial revenue, adjusted provincial expenditure and adjusted provincial revenue have significant impact on poverty reduction. Therefore, it is suggested that more fiscal independence should be given at provincial and local government level, because provincial and local governments are well informed about the needs and demands of the people and better services can be provided through the local and provincial governments.

In addition, it is observed that more employment and investment opportunities play pivotal role in reducing poverty. Inflation turns out to be harmful for poverty reduction. The analysis also concludes that high literacy rate is greatly helpful to reduce the poverty. Based on these findings, the following policies are recommended:

- **i.** The provincial level governments should be given more autonomy in expenditure because they may be able to generate more employment opportunities.
- **ii.** Provincial and local governments should be given more independence in revenue generation in order to curtail inflation and to raise the purchasing power of the people.
- **iii.** Education and health facilities should be improved as much as possible.

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