

## EMPIRICAL ANALYSIS OF INTERRELATIONSHIPS AMONG GROWTH IN AGRICULTURAL SECTOR, POVERTY AND INEQUALITY IN PAKISTAN

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### *Abstract*

*The purpose of this study is to analyze the relationship between growth in agricultural sector and poverty in Pakistan. It explores that how much the poor people have gained from growth in agricultural sector of Pakistan by considering growth magnitude and benefits obtained by the poor people resulting from growth for the period of 1985 to 2005 through applying OLS Regression Technique. The results indicate that the variable of growth in agricultural sector is significantly and negatively associated with the variable of poverty, i.e., the growth in agricultural sector of Pakistan will result in reducing the level of poverty in Pakistan.*

*Key words:* growth in agricultural sector, Pakistan, poverty

### INTRODUCTION

The link between poverty and growth has been a mooted issue. At one side, the growth is being regarded a fundamental element for reducing poverty (World Development Report, 1990), with prerequisites of social services, health and education access. At other side, it is being realized that relationships of inequality, poverty and growth complex and non-linear. Kuznets (1955) found growth and inequality have inverted U shaped association, which describes that in the beginning, inequality will rise with growth, whereas, it will decrease at excessive growth level since growth benefits reaches to the people with low income.

The methods originated by Kanbur (2002) and Kakwani (1993) provided elasticity information for the shorter time periods but did not explain elasticity in long-term time period of inequality, poverty and growth. Datt and Ravallion (1992) provided better technique because it did not rely on only assumptions of statistics and but it also provided elasticity information for shorter time period by depending on two or very few surveys. Dollar and Kraay (2001) were of the

opinion that growth of economy offers same benefits for the poor people as for the overall economy. Knowles (2001) also discovers that inequality negatively and significantly impact growth. Foster and Szekely (2000) suggested that elasticity's positive value shows that growth is good for the poor. Therefore, it is being suggested that for achieving swift poverty cutback, the Poverty Equivalent Growth Rate (PEGR) needs to be expanded instead of just achieving normal growth (Kakwani and Son 2004).

The rural poor people can be classified according to agricultural land access: the cultivators have land access being smaller tenants and landowners, and being landless and unskilled laborers. The people who do not cultivate may be among the poorest people in rural poor (Khan 1998). Saboor (2004) determined trend analysis for income inequality and rural poverty through axiomatic technique for assessing influence of several variables on Pakistan's household poverty status, for developing PEGR to analyze the influence of agricultural growth on rural poor and for forecasting co-integrated movement of inequality, poverty and agricultural growth.

There are very few studies which explored the association of poverty level and growth rate in agricultural sector of Pakistan. Therefore, the objective of this study is to investigate the relationship between poverty and agricultural growth in Pakistan for the period of 1985 to 2005 through applying OLS Regression Technique.

Rest of study has been arranged as follows: the materials and methods has been presented in Section 2, the results have been described in section 3, whereas, the last section describes the concluding part.

## MATERIALS AND METHODS

The data for the period of year 1985 to year 2005 has been collected form Pakistan's Economic Surveys and United Nations Statistical Division Database. The OLS regression model has been applied in order to determine relationship of growth in agricultural sector and poverty level in Pakistan. The objective of this study is to explore the relationship of agricultural sector's growth and level of poverty in Pakistan through applying OLS regression model.

The regression model which has been estimated is as follows:

$$\text{Poverty Level} = \beta_0 + \beta_1 \text{GDP} + U_t$$

where:

Poverty Level = Poverty headcount ratio expressed as percentage

GDP = Real GDP growth rate expressed as percentage

$U_t$  = Representing error term

SPSS 16 software has been used for data analysis.

## RESULTS AND DISCUSSIONS

The regression results have been estimated through OLS regression technique and the results have been presented in table 1, 2 and 3. The results of table 1 have shown that the value of adjusted R square is 0.816 which indicate that the independent variable which has been used in this model have explained

around 81.8 % of the variations occurring in poverty level of Pakistan.

The value of Durbin Watson statistics is 1.614, which indicates that there is no problem of multi-collinearity as the value is within acceptable range of 1.5-2.5 (Table 1).

Table 1. Model Summary<sup>b</sup>

| Model | R     | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|-------|-------|----------|-------------------|----------------------------|---------------|
| 1     | .908a | .824     | .816              | 5.00346                    | 1.614         |

a. Predictors: (Constant), GDP growth rate

b. Dependent variable: Poverty level

The results of table 2 show that P-Value is 0.000, which describes that the overall model is significant to explain level of Poverty in Pakistan and the mathematical form of the model is correct. The results of Table 3 describes that the variable of growth rate is negatively and significantly associated with poverty level in Pakistan. It means that if the value of real GDP growth rate will increase, it will cause the poverty level to decrease.

Table 2. ANOVA<sup>b</sup>

| Model      | Sum of Squares | df | Mean square | F      | Sig.  |
|------------|----------------|----|-------------|--------|-------|
| Regression | 2351.530       | 1  | 2351.530    | 93.931 | .000a |
| Residual   | 500.692        | 20 | 25.035      |        |       |
| Total      | 2852.222       | 21 |             |        |       |

a. Predictors: (Constant), GDP growth rate

b. Dependent variable: Poverty level

Table 3. Coefficients<sup>a</sup>

| Model      | Unstandardized coefficients |            | Standardized coefficients | t      | Sig. |
|------------|-----------------------------|------------|---------------------------|--------|------|
|            | B                           | Std. Error |                           |        |      |
| Constant   | 96.337                      | 2.175      |                           | 44.302 | .000 |
| GDP growth | -.391                       | .040       | -.908                     | -9.692 | .000 |

a. Dependent variable: Poverty level

## CONCLUSIONS

Sustainable and fast growth in agriculture can perform a significant function to achieve

poverty reduction. This study recommends that growth in agricultural is indispensable for achieving reduction of poverty. This study has determined the relationship of real growth rate of GDP in agricultural sector and level of poverty in Pakistan for the period of 1985 to 2005 through applying Ordinary Least Squares (OLS) Regression Technique. The results have shown that the growth of agricultural sector can result to decrease the level of poverty in Pakistan. The government should focus on agricultural sector growth in order to decrease the poverty level in Pakistan.

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