**Climate Change and Profit Efficiency in Punjab, Pakistan: Evidence from Household-Level Panel Data**

Khush Bukhat Zahid and Munir Ahmed

Author email: Khushbukhatphd2009@gmail.com

**Abstract**

This study seeks to examine, both theoretically and empirically, the impact of climate change on farm Profit efficiency in Rural Punjab Pakistan. Current study explores the climate change impact by using Stochastic Profit Frontier Model at farm level with panel data. The outcomes of this study are indicative of a strong impact of climate change on the agriculture of Punjab, Pakistan. Increase in long run normal precipitation and temperature have significant effect on farm profit that fluctuates in direction as well as magnitude across quarters. The incidence of weather shocks and socioeconomic characteristics of the farming households are important factors of profit efficiency at farm level. The quasi fixed inputs are positively and significantly related to farm profits while input prices contribute negatively to farm profitability. The average profit efficiency score turned out to be 0.72, suggesting that the average farm, by improving their efficiency can increase the profit up to 28 percent. The findings of present study are evocative of huge impact of climate change on the rain-fed areas of Punjab since these are water scarce areas depending on rain fall for cropping. Arguably, it is vital for the better performance of the agriculture sector to combat the impact of climate change more effectively through implementation of adaptation strategies.

***Keywords:***Agriculture, Farm Production, Climate Change, Profit efficiency, Stochastic Profit Frontier Model and Farm Level Panel Data.

**JEL codes:**C23, D01,Q12