

Impact of Climate Variability on Household's Crop Income in Central Highlands and Arssi Grain Plough Areas of Ethiopia

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Abstract : Currently the world economy is suffering from one critical problem, climate change. Some studies done before identified that impact of the problem is region specific means in some part of the world (temperate zone) there is improvement in agricultural performance but in some others like in the tropics there is drastic reduction in crop production and crop income. Climate variability is becoming dominant cause of short-term fluctuation in rain-fed agricultural production and income of developing countries. The purely rain-fed Ethiopian agriculture is the most vulnerable sector to the risks and impacts of climate variability. Thus, this study tried to identify impact of climate variability on crop income of smallholders in Ethiopia. The research used eight rounded unbalanced panel data from 1994- 2014 collected from six villages in the study area. After having all diagnostic tests the research used fixed effect method of regression. Based on the regression result rainfall and temperature deviation from their respective long term averages have negative and significant effect on crop income. Other extreme devastating shocks like flood, storm and frost, which are sourced from climate variability, have significant and negative effect on crop income of households'. Parameters that notify rainfall inconsistency like late start, variation in availability at growing season, and early cessation are critical problems for crop income of smallholder households as to the model result. Given this, impact of climate variability is not consistent in different agro-ecologies of the country. Rainfall variability has similar impact on crop income in different agro-ecology, but variation in temperature affects cold agro-ecology villages negatively and significantly, while it has positive effect in warm villages. Parameters that represent rainfall inconsistency have similar impact in both agro-ecologies and the aggregate model regression. This implies climate variability sourced from rainfall inconsistency is the main problem of Ethiopian agriculture especially the crop production sub-sector of smallholder households.

Keywords : climate variability, crop income, household, rainfall, temperature

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