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Thesis Title: An Empirical Analysis of Deforestation in Malawi

Abstract:

This paper analyses empirically at micro-level the causal-effect of deforestation in Malawi. Precisely, it establishes by means of econometric methods if demographic factors influence deforestation and the impact of deforestation on safe drinking water. Micro-level empirical analysis of deforestation in Malawi establishes with insignificant errors the statistical links between population growth and deforestation as well as deforestation and access to safe drinking water. As such, our option for micro-level analysis is to get the closest reliable result possible so that we can establish a better understanding of the causal-effect links of deforestation. This will in turn help in affirming the seriousness of the problem and employment of holistic approaches in combating it.

Forests provide human population with significant ecosystem services, which include but not limited to the provision of food, clean water, fuel and natural medicines. Although forests cover about 30 percent of the world's land area, tropical forests have experienced a net annual loss of about seven million hectares from 2000 to 2010. Previous research managed to demonstrate associations and not the causal-effect relationships of deforestation due to limitation of available data.

This paper establishes a link between population growth, deforestation and access to safe water using data set of Malawi over the period 2000 to 2010. Using satellite images of land use/land cover change, Malawi Population and Housing Census (PHC) and Malawi Demographic Healthy Survey (DHS), the paper estimates the effect of population growth on deforestation and access to clean water. Two Stage Least Square (2SLS) regression model has been used to examine the impact.

Subsequently, the results illustrate strong empirical evidence that high population growth increases deforestation through expansion of agricultural land. The results show that 1 percent increase in population growth increases deforestation rate by 2.7 percent through increase in agricultural land. In terms of land use changes, one hectare gain in agriculture land results in 0.57 hectares loss in forest land cover. Furthermore, we find that one percentage point increase in deforestation significantly decreases access to safe drinking water by 1.3 percentage points.

The research findings motivate fresh concerted efforts in fighting deforestation. The results are substantiated with established statistical figures of the cause-effect links as well as visual evidence of land use change images (maps). Reading this paper, therefore, will help in understanding how population growth is linked to deforestation in one part and how deforestation is linked to access to clean water on the other hand.