



Tropentag, September 20-22, 2017, Bonn

“Future Agriculture:
Socio-ecological transitions and bio-cultural shifts”

Biomass Energy Use, Price Changes and Labor Allocation in Rural Areas: an Agricultural Household Model-based Analysis

CHEN QIU

Center for Development Research, University of Bonn, Department of Economic and Technological Change, Germany

Abstract

As a kind of renewable resource derived from biological materials, biomass energy provides a link between agriculture and human living. It plays an important role in agriculture-based rural livelihoods. Building on the growing interest in the role of biomass energy use in poverty reduction and food security, the main objective of this study is to robustly investigate how different positive and negative price shocks in exogenous markets potentially influence household biomass energy using behaviours under the imperfect labour market in rural China. Since household's consumption, production and labour allocation decisions are interlinked, the impacts of exogenous price changes on biomass energy use are complex. Thus, a comprehensive analysis framework is thus developed in this paper based on an agricultural household model. The total behavioural effects are estimated by adopting a two-stage estimation strategy: the shadow wage of household labour is firstly estimated and then used to estimate consumption and labour demand systems. The results show that the effects of price changes on household biomass energy use include a direct (i.e. the supply or demand responds to an exogenous shock) and an indirect (i.e. the supply and demand adjustments to the endogenous variations in the shadow wage induced by this exogenous shock) component. In addition, neglecting the indirect effect can bias the final effect on household biomass energy using behaviours, implying that market failures reduce the flexibility in household's behaviours. The findings of this paper also provide important policy implications for future biomass energy development: the market prices should be adjusted to control the demand for biomass energy, and the measures aiming at eliminating the market failures should be attached importance at the same time.

Keywords: Agricultural household model, biomass energy use, exogenous price changes, labour allocation, rural livelihoods