

On the Adoption and Dis-adoption of Household Energy and Farm Technologies

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AKADEMISK AVHANDLING

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Abstracts

This thesis consists of four self-contained papers.

Paper I: Intra-household bargaining power and demand for clean and energy efficient stoves: Experimental evidence from rural Ethiopia

Clean and energy efficient stoves improve the well-being of rural households by reducing fuel consumption, fuel collection time and the adverse health impacts of indoor air pollution. However, the demand for such stoves is surprisingly low in rural areas of many less-developed countries. A real stove purchase experiment is conducted in Ethiopia to study the role of intra-household bargaining power in explaining the observed low demand for improved stoves. Using the Becker-DeGroot-Marschak method, we find a significant effect of intra-household bargaining power on improved stove adoption. However, a follow-up survey conducted long after the stove distribution shows that bargaining power does not affect how quickly the new stove was put into use. Our findings show the importance of empowering women in order to increase adoption in rural improved stove programs.

JEL Classification: Q40, D1, Q50

Key Words: Improved stove, Willingness to pay, Autonomy (power), Ethiopia

Paper II: Disadoption, substitutability and complementarity of agricultural technologies:

A Random Effects Multivariate Probit Analysis

In this paper, we analyze what drives farmers to disadopt green revolution technologies (inorganic fertilizer and improved seed) and whether the disadoption of green revolution technologies is related to adoption/non-adoption of other sustainable land management practices (such as farmyard manure and soil and water conservation practices). Random effects multivariate probit regression results based on rich plot-level data suggest that black/brown soil type, flatter slope, shorter distance to homestead and extension centers, and access to water are negatively correlated with disadoption of green revolution agricultural technologies. Further, we find that the disadoption of green revolution technologies is related to the non-adoption of other sustainable land management practices. Our results strengthen previous findings of complementarity between green revolution technologies and sustainable land management practices by showing that the latter can reduce the likelihood of disadoption of green revolution inputs.

JEL Classification: Q01, Q12, Q16, Q18.

Key Words: Adoption, disadoption, agriculture, technology, multivariate probit, Ethiopia

Paper III: Household fuel choice in urban China: Evidence from panel data

Using seven rounds of household survey data that span more than a decade, this paper analyzes the determinants of household fuel choice in urban China. Using correlated random effects generalized ordered probit model, we find that household fuel choice in urban China is related to fuel prices, household's economic status and size, and household head's gender and education. Our results suggest that policies and interventions that reduce prices of clean fuel sources and empower women in the household are of great significance in encouraging the use of clean energy sources.

JEL classification: C25, Q23, Q40, Q42

Key words: Household fuel choice; Panel data; Random effects generalized probit model; Urban China

Paper IV: Adoption and disadoption of electric cookstoves in urban Ethiopia: Evidence from panel data

Previous studies on improved cookstove adoption in developing countries use cross-sectional data, which make it difficult to control for unobserved heterogeneity or to investigate what happens to adoption over time. We use robust non-linear panel data and hazard models on three rounds of panel data from urban Ethiopia to investigate the determinants of adoption and disadoption of electric cookstoves over time. We find that the prices of electricity and firewood and access to credit are major determinants of adoption and transition. Our findings have important implications for policies aiming to promote energy transition and to reduce the pressure on forest resources in developing countries.

JEL classification: Q40, Q41, Q42, Q48

Keywords: Cookstoves; Electric Mitad; Firewood; Panel data; Random effects probit

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