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Coffee Cultivation in the Presence of Market Imperfections: an Analysis of the Factors That Determine Productive Efficiency of Coffee Farmers in Costa Rica

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Abstract

World market prices for coffee dropping to their lowest level in a century have casted the economic sustainability of coffee production into doubt. Given increased competitive pressure in the coffee sector, an efficient organisation of the production process becomes essential for farmers to stay in business. The current paper seeks to identify those farm and farmer characteristics that explain differences in technical efficiency among farmers.

Technical efficiency is usually associated with farmers' management skills. As the timing of maintenance activities and fertiliser applications matters in the production process, timely availability of labour and liquidity are key factors to achieving productive efficiency. As a consequence, imperfect labour and capital markets limit farmers that do not dispose of sufficient family labour or liquidity sources in their ability to produce efficiently. If market access is associated with high transaction costs, cooperatives can be an effective means to overcome these constraints. As concerns liquidity constraints for example, coffee cooperatives in Costa Rica provide farmers with short term credit in the form of fertilizers and other agro-chemicals.

Primary data from 216 coffee farmers in Costa Rica is being used for the econometric analysis. We simultaneously estimate a stochastic frontier model and the effects of a range of farm-specific variables on technical efficiency levels. Our model does not support the hypothesis that missing access to labour markets is a major constraint in coffee production in Costa Rica. We find some evidence that liquidity constraints lead to decreased efficiency levels. Farmers who pursue other income-generating activities besides coffee that provide them with liquidity attain higher levels of productive efficiency. However, the effect of total farm size, which is used as an indicator for wealth, on productive efficiency is not significant. The analysis further reveals that membership in cooperatives plays an important role in helping farmers to produce efficiently. Therefore, specialised coffee cooperatives should be fostered to provide farmers with access to productive resources and information, whenever market failures prevail.

Keywords: Coffee production, cooperatives, market imperfections, stochastic frontier analysis