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Livelihood strategies of cacao producers in Ecuador: Effects of national policies to support cacao farmers and specialty cacao landraces

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ABSTRACT

This study identifies the livelihood strategies pursued by small cacao farmers in the Guayas coastal region in Ecuador, where two distinct cacao varieties are grown: the fine flavor variety, Cacao Nacional (CN), and a hybrid variety (CCN-51). Enhancing CN production is regarded as an economic development strategy since CN variety beans are characterized by premium prices in international markets. This study aims to assess the trade-offs faced by small cacao producers in the production of specialty (CN) vs. commodity (CCN-51) cacao and how they affect their livelihoods. A detailed household survey sampled 188 households. Based on activity variables, four latent profiles of livelihood strategies were identified, which were related to capital asset endowment and income share variables. The results show that there was not a clear gap between cultivation of CN and CCN-51, as 60% of the sampled households simultaneously grew both varieties. The results indicate that the variable "share of land allocated to CN" does not significantly contribute to discriminating among profiles. Households with a low share of land allocated to CCN-51 showed higher income diversification strategies and vice versa. Our study also shows that the lack of appropriate incentives may threaten the future cultivation of CN since the National policy for CN rehabilitation has had little impact on the more cacao-driven profiles that have a lower asset endowment. The design, structuring and maintenance of a domestic differentiated value chain for the CN variety, together with income diversification measures and prior improvement on the asset endowment of these profiles, seems to be the pathway to improve the livelihoods of small farmers and increase the success of the current policy for fine flavor cacao rehabilitation at the national level.

1. Introduction

Cacao is the world's third most important agricultural export commodity and the second most important cash crop in the tropics (T. Blare and Useche, 2013; Galarza, 2012). It is estimated that more than 80% of cacao is produced by 7–8 million small family-managed cacao farms in over 50 countries worldwide (ECLAC et al., 2015).

The world cacao market distinguishes between two broad categories of cacao beans. Fine flavor cacao beans represent 5%–10% of the total world market and can be sold for a premium because of their outstanding characteristics (Galarza, 2012; Melo and Hollander, 2013; ICCO, 2006). International demand for fine flavor cacao outweighs supplies, creating a potential attractive niche for its chain development at the national level, if certain additional incentives such as a price premium are appropriately distributed to all actors along the chain (Blare and Useche, 2013; ICCO, 2012).

Ecuador plays a major role in the world cacao market in terms of volume and quality, as it is the largest producer of fine flavor cacao, producing approximately 65% of the global supply (Blare and Useche, 2013; Squicciani and Swinnen, 2016; WFC, 2013). The fine cacao variety in Ecuador, known locally as cacao Nacional (CN), is grown in polyculture systems with other trees that produce timber and fruits and with other crops such as maize or soybeans. The modern hybrid CCN-51 is a full-sun variety that may double the productivity of its CN counterpart at the expense of being more demanding in the use of inputs (fertilizers or herbicides), among other key differences (Astudillo Paredes, 2014; Blare and Useche, 2013; Franzen and Mulder, 2007; MAGAP, 2013; Ton et al., 2008). In the national Ecuadorian market, small farmers are paid the same price for both varieties. Since the small farmers do not perceive price premiums for CN, it is common that they combine both varieties (MAGAP, 2013).

The Ecuadorian cacao small farmers develop their activities in a

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general context characterized by low productivity, high concentration of assets and vulnerability of markets[1] (SENPLADES, 2017). Sectoral constraints include a lack of adequate grades and standards throughout the marketing chain, difficulties in accessing basic and extension services, inefficient articulation among authorities and support organizations with productive actors, aging trees with low productivity and resistance to disease and pests (Astudillo Paredes, 2014; Blare and Useche, 2013; Kooij, 2013; Lehmann and Springer-Heinze, 2014).

Linking small farmers to higher-value markets has been perceived by governments, donors and NGOs as a way to reduce poverty among these vulnerable populations, either directly through increased incomes or employment or indirectly through spillover effects in local economies (Horton et al., 2016; UNIDO, 2011). Enhancing CN production is viewed as an economic development strategy (CORPEI-BID, 2009) that may contribute to alleviating poverty in rural communities, which reached 38.2% in Ecuador (INEC, 2016). Since 2009, the Ecuadorian government, along with local and international development organizations, has implemented the Project on Restoring CN cultivation (PRCN, hereafter). The assumption underpinning the design of this program is that protecting the quality of the CN variety and strengthening the linkages between producers, buyers and processors in local and international higher-value markets will lead to improvement of the living conditions of cacao producers. PRCN can be viewed as value chain development (VCD) to target poor and vulnerable populations upstream in the value chain and reduce poverty (Horton et al., 2016). However, these strategies have been criticized for the underlying assumption that the small holders to whom these policies are addressed do not face substantial trade-offs when using their resources to participate in these chains (Stoian et al., 2012; Ton et al., 2011).

This study intends to cover a research gap on the trade-offs faced by small cacao farmers in Ecuador in the production of specialty (CN) vs. commodity (CCN-51) cacao and how these impact on their livelihoods. This overall aim is focused on two specific objectives. First, to determine the factors associated with the choice of livelihood strategies of small farmers in Ecuador linked to the cultivation of two varieties of cacao, CN and CCN-51, which have significantly different economic, social and environmental impacts. Second, to investigate the influences of the PRCN on the livelihoods of small farmers, including their capital asset endowments, activities, income shares and livelihood strategies. For this purpose, a detailed household survey was applied in nine cacao-producing villages in the Guayas, the largest cacao-producing province in Ecuador.

This study adopts the sustainable rural livelihoods and household livelihood strategy frameworks (Carney, 1999; Scoones, 1998; Jansen et al., 2006; Nielsen et al., 2013). Many studies have adopted these frameworks to determine the livelihood strategies rural farmers engage in to earn a living (outputs) and their relation with external variables such as capitals assets (inputs) or income (outcomes) (e.g., Alemayehu et al., 2018; Alemu, 2012; Browder et al., 2004; Brown et al., 2006; Fang et al., 2014; Hua et al., 2017; Jansen et al., 2006; Pichon, 1997; Walelign et al., 2016 Bebbington, 1999; Bhandari, 2013).

Most of these studies determine the livelihood strategies of the sampled population (through principal component analysis, latent cluster analysis, or latent Markov cluster analysis). Then, different regression models are adopted (e.g., multinomial logit or ordinary least square models) to determine the relation of these strategies with external variables (Nguyen et al., 2015; Nielsen et al., 2013; Walelign and Jiao, 2017; Walelign et al., 2016). However, to our knowledge, an integrated assessment of strategies and external variables has not been performed.

[1] Rural poverty by income is 38.2% whereas the multidimensional poverty rate is 59.9% and the rate of adequate employment is only 27.85% of the population (SENPLADES, 2017).

This study applies a novel variant of latent class analysis (LCA) known as improved three-step that allows for identification of groups or profiles in a population based on a set of observed variables and implicitly acknowledges that these profiles may relate to external variables (Bakk et al., 2013; Vermunt, 2010). LCA uses a probability-based classification, making it advantageous over traditional clustering techniques (Magidson and Vermunt, 2002). The three-step approach of LCA incorporates a correction procedure that avoids the downward-biased estimates of the strength of the relationships between the profiles and external variables that may arise when these relationships are estimated simultaneously with the model identifying the latent variable (one-step) or separately (three-step method without correction) (Bolck et al., 2004; Vermunt, 2010). This statistical approach also allows for analyzing the relationship between livelihood strategies, capital assets and incomes in a robust manner, more consistently aligned with the household livelihood strategy framework. To our knowledge, this approach has not been applied in the assessment of livelihood strategies.

2. Theoretical framework: sustainable rural livelihoods and household livelihood strategy

Drawing on the work of Walelign and Jiao (2017), this study is theoretically grounded in the conceptual frameworks of sustainable rural livelihoods (SRL) (Ellis, 2000; Scoones, 1998, 2015) and household livelihood strategy (HLS) (Jansen et al., 2006; Nielsen et al., 2013). The SRL describes the basis for livelihood analysis and the HLS elaborates upon the SRL and enables examination of the relationships between the different elements of the SRL framework to determine the different livelihood strategies that households undertake to earn a living.

The SRL framework defines a sustainable livelihood as one that comprises the capabilities, assets (including material and social resources) and activities required for a means of living (R Chambers and Conway, 1992). A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets while not undermining the natural resource base (Chambers and Conway, 1992, p. 5; Scoones, 1998, p. 6).

The SRL framework (Carney, 1999; Scoones, 1998) links livelihood resources (designated here by the term capital assets) and outputs (livelihood strategies) to outcomes (e.g., income generated, wellbeing) (Scoones, 2009). Agricultural intensification (more output per unit area through capital investment or increases in labor inputs), agricultural extensification (more land under cultivation), livelihood diversification (diversifying to a range of off-farm income earning activities) and migration (seeking a livelihood elsewhere, either temporarily or permanently) are some of the broad strategies that rural households pursue to make their living (Scoones, 1998).

These input-output-outcome elements identified by the SRL framework are amenable to quantitative analysis of the livelihood strategies of rural households (I Scoones, 2009). The HLS framework quantifies livelihood strategies based on the portfolio of main activities that rural households undertake depending on the available assets (Babulo et al., 2008; Jansen et al., 2006; Nielsen et al., 2013; Winters et al., 2009). The strategies are directly and indirectly influenced by capital assets and the relevant contextual factors that generate specific outcomes such as income.

Households in both frameworks constitute the basic unit of analysis (Ellis, 2000; Winters et al., 2009; Nielsen et al., 2013; Walelign and Jiao, 2017) in which three closely connected components are assessed: activity variables, capital assets and outcomes. The latter two largely draw on the SRL framework and the definition of activity variables and the modeling approach adopted in this work align with the HLS framework. The variables are described in more detail below and are depicted in Fig. 1.