



Livelihood Strategies and Dynamics in Rural Cambodia

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Summary. — This paper addresses one of the major challenges in rural livelihood analysis to quantitatively examine the dynamics of household livelihood strategies. It investigates the interactions between livelihood assets, activities, and outcomes, and captures the dynamics of long-term changes and their underlying factors. The study aims to identify the classification of rural livelihood strategies, their transitions and factors influencing these processes and changes. We employ the dynamic livelihood strategy framework, and use panel data for 2008 and 2012 covering 464 households in 15 villages in Cambodia, for latent class cluster analysis and regression estimation. In this paper, livelihood strategies are quantified based on allocation of available resources, which overcomes the limitations of income-based analysis. Our study identifies five household livelihood strategies pursued in the study areas, and the results show that over 70% of households change livelihood strategies over time in response to evolving pressures, incentives and opportunities. The study identifies covariates that shape the choices of livelihood strategies and affects the households' access to more remunerative strategies, such as education, ownership of physical assets, and access to infrastructure. These findings suggest policy implications for improving the range of livelihood choices available to lower income groups to move out of poverty trap.
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1. INTRODUCTION

Rural households in developing countries often engage in a diverse set of income-generating activities in an attempt to diversify their income base in order to reduce risk exposure, maintain consumption requirements in the event of shocks, and accumulate wealth (e.g., Babulo *et al.*, 2008; Cavendish, 2000; Davis *et al.*, 2010; Ellis, 1998; Reardon, 1997). Rural livelihoods are dynamic and able to respond to evolving pressures and opportunities (Barrett, Clark, Clay, & Reardon, 2005; Dorward, Anderson, Clark, Keane, & Moguel, 2001; Ellis, 2000); thus, households adopt and adapt their livelihood strategies over time according to the asset composition, contextual factors and internal stresses, to build resilience and maintain sustainability of their livelihoods (Ellis, 2000; Scoones, 2009). Classification of livelihood strategy and investigation of its transitions in a systemic and quantitative approach is important for understanding the dynamics of rural livelihoods, the determinants of livelihood strategy choices and mobility, and the implications for designing effective poverty alleviation and rural development strategies.

While livelihood perspectives have dominated rural development thinking and practices for the past 20 years, they have also recently been criticized for lack of innovation (De Haan & Zoomers, 2005; Scoones, 2009), e.g., leading to inability to address emergent issues such as shifts in rural economies. A key point of criticism has been the propensity for single-time frame analyses that fail to catch changes over time. Moreover, the few available dynamic livelihood studies are analyzed qualitatively (e.g., Mushongah & Scoones, 2012; Wiggins, 2000), and household-level quantitative livelihood analysis has been hampered by a lack of data and analysis techniques. Three important recent developments are: (i) the development of data collection instruments that allow for the estimation of environmental income (Angelsen, Larsen, Lund, Smith-Hall, & Wunder, 2011), providing improved understanding of the composition of total household incomes; (ii) the emergence of multiple-wave environmentally augmented panel datasets, and (iii) advances in data analysis with focus on activity

variables (i.e., variables used as proxies for the amount of labor and inputs allocated to each income-generating activity; e.g., Nielsen, Rayamajhi, Uberhuaga, Meilby, and Smith-Hall (2013)). To this date, only two studies have quantitatively investigated dynamic household-level livelihood strategy choices and their determinants (Van den Berg, 2010; Walelign, Pouliot, Larsen, & Smith-Hall, 2017), and other livelihood strategy studies have focused on coping and short-term adaptation (Scoones, 2009). Another strand of literature on rural dynamics has focused on rural poverty (see e.g., Baulch & Hoddinott, 2000; Cruces & Wodon, 2003; Dartanto & Nurkholis, 2013; Dhamija & Bhide, 2011; Haddad & Ahmed, 2003; Kedir & McKay, 2005; Krishna, 2006, 2007, 2010; May & Woolard, 2007; Muller, 2003; Naschold, 2012; Nega *et al.*, 2010; Woolard & Klasen, 2005) without any specific focus on rural livelihood strategy dynamics. This study thus provides one of the first empirical studies of systemic transformation of livelihood strategies over time.

The concept of livelihood strategies remains elusive, as does an associated method for quantitatively identifying livelihoods and its strategies (Brown, Stephens, Ouma, Murithi, & Barrett, 2006; Van den Berg, 2010). The most common approach to characterizing household strategies is to group households according to the share of income earned in different sectors of the rural economy (e.g., Barrett *et al.*, 2005; Dercon & Krishnan, 1996). A major drawback of this approach is that it does not adequately represent the way in which rural households allocate their labor, assets and credits into the different activities. For example, households may pursue different livelihood strategies even if the total outcome of the activities in which they engage, as measured in income, is the same. Another limitation of income-based measures for poverty analyses is due to the stochastic nature of income. For example, agricultural income shows considerable yearly fluctuations due to climatic variation; but low income in low return years does not necessarily imply less importance of this

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activity to rural households. Accordingly, income-based measures are not suitable for providing insights into what people do to gain a living, what income options provide the most promising means to escape poverty, and what entry barriers prevent the accumulation of wealth (Nielsen *et al.*, 2013).

An alternative approach to poverty analyses which takes into account the shortcomings of income-based measures is to classify households according to their allocation of labor, assets, and other inputs into different income-generating activities, hereafter called livelihood strategies. Ellis (2000) defines livelihood strategies as the composition of activities that generate the means of household survival. Classifying households into livelihood strategy groups allows for (i) quantification of the proportions of the population engaged in each strategy, providing insights for development of targeted interventions and (ii) the identification of household and contextual factors influencing choices of livelihood strategies which can help to pinpoint likely entry barriers to poverty-reducing livelihood options. For example, a study done in Nepal using livelihood strategy clusters has shown petty trade as being able to lift people out of poverty (Walegn *et al.*, 2017); such a finding allows for policy interventions targeting the support of trade to the benefit of poor rural households in Nepal. This study employs non-predefined latent cluster analysis by grouping households according to activity choices that captures the asset characteristics of each strategy group—because activity choices are directly linked to households' asset endowments and also detached from the stochastic influence of productive outcomes.

The general objective of this paper is to empirically apply a dynamic livelihood strategy approach to examine transitions in household livelihood strategies over time and factors influencing these processes and changes. Specifically, the article seeks to address five questions: (i) what are the household livelihood strategies? (ii) how do households transit between strategies over time? (iii) are household livelihood outcomes (i.e., income level) significantly associated with the choice/practice of livelihood strategies? (iv) what are the determinants (i.e., assets, contextual factors) affecting choice/practice of livelihood strategy? and (v) what are the entry barriers preventing certain households to access the most remunerative strategies? In response to the above research questions, this study takes a systematic approach to analyzing rural livelihood strategies, their transitions and the factors influencing mobility between livelihood strategies. This study is based on the dynamic household livelihood strategy framework adapted from Nielsen *et al.* (2013) and Winters, Corral, and Gordillo (2001). Based on survey data on household and household head characteristics, income and assets collected from 464 households in Cambodia in 2008 and 2012, we identify five livelihood strategy groups by applying latent class cluster analysis with eight activity variables. We then quantitatively examine the movements between livelihood strategy clusters during 2008–12 and the outcome (i.e., income generated) of the different livelihood strategies. Finally, using a multinomial logit model and an ordered logit model, we uncover the determinants affecting the choice/practice of livelihood strategies and the likely pull and push factors leading to upward or downward livelihood strategy mobility (in association with income levels). Our findings provide important insights into rural livelihoods and their dynamics and policy implications for interventions in removing entry barriers to accessing more remunerative livelihood strategies.

2. THEORY AND CONCEPTUAL FRAMEWORK

(a) *Dynamic livelihood strategy framework*

Figure 1 presents the dynamic livelihood strategy framework which is based on the household livelihood strategy framework (Nielsen *et al.*, 2013) originally adapted from Winters *et al.* (2001). The main concepts used for each period are assets, activities, and outcomes. People can be poor at any point in time because they possess too few assets to generate sufficient income, or because of limitations on their ability to use the assets they possess (Carter & May, 2001). However, changes that occur in time can create new opportunities for households, i.e., to accumulate assets or lift constraints on asset utilization, such that households can choose activities which can temporarily or permanently alleviate their poverty. Likewise, time can be an arena for negative shocks to occur, pushing some households further into poverty (Barrett, Reardon, & Webb, 2001; Carter & May, 2001; Ellis, 1998, 2000). Contextual factors also strongly impact the livelihood strategy choices and outcomes (e.g., large-scale economic land concessions taking place in rural communities in Cambodia). When households succeed in adopting a more remunerative livelihood strategy, upward mobility is observed; downward mobility is observed when households transit to a less remunerative livelihood strategy. Households may also stay poor or non-poor by keeping the same livelihood strategy or shifting to a livelihood strategy which is equally remunerative. Households' decision of livelihood strategy transitions are in turn affected by their assets, the context in which they live in, and the outcomes of previous livelihood strategies (i.e., through investments and savings).

(b) *Choice of activity variables*

Activity variables act as the link between households' assets and the related flow of income generated through those assets. Households employ different assets to make a living (Barrett *et al.*, 2001; Carter & May, 2001). Consequently, several variables have been included in this study to identify livelihood strategy groups. Selected variables are: (i) variables that measure the allocation of time (labor) and other inputs into different income-generating activities; and (ii) money transfers (e.g., remittances sent from a household member working abroad). For the first type of variables, labor allocation is the most direct measure of how much time households choose to invest in each activity. In this study, labor allocation in employment activities (i.e., number of wage labor days) is used as an activity variable. However, our survey did not capture labor allocation for self-employed activities. Therefore, following Nielsen *et al.* (2013), input costs (e.g., cost of agricultural inputs (e.g., seeds, fertilizers, hired labor, etc.) are used in order to measure the level of household involvement in self-employed activities. Crop land is an important input into agricultural activities, and hence we use crop land size as an activity variable. In order to measure households' involvement in environmental activities (i.e., collection of environmental products such as fuelwood, wild foods, fodder, etc.), we use the number of times that environmental products are collected as an activity variable due to the fact that this activity requires very low inputs (Angelsen & Wunder, 2003), hence input costs would not have been a good measure. In total, eight activity variables are included: (i) number of times environmental products are collected, (ii) size of crop land, (iii) value of agricultural inputs, (iv) value of livestock, (v) value of business

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