

# Loans and Leaving: Migration and the Expansion of Microcredit in Cambodia

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Received: 2 August 2014 / Accepted: 12 May 2015 / Published online: 24 May 2015  
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**Abstract** Over the last decade, the expansion of microfinance institutions (MFIs) has dramatically shifted the availability of credit across the developing world. This recent development provides an opportunity to examine the relationship between household labor migration and access to and use of formal credit. Both theories of migration and the expectations of formal credit providers have suggested that labor migration and credit are substitute solutions to the demand for capital in the developing world, with the implication that greater access to formal financial services may stem migration out of rural places. Using household survey data from Cambodia, an MFI-saturated country, we find that households using formal credit and households with greater access to formal credit are more likely to have labor migrants than households without access. This association persists across size of loan, purpose of loan, remittances behavior, and for domestic migrations. These findings complicate our understanding of the relationship between credit and migration, and call for a greater recognition of the importance of context in framing migration behavior.

**Keywords** Migration · Microfinance · Debt · Credit · New economics of labor migration · Cambodia

According to the new economics of labor migration (NELM) theory, a central factor motivating migration in transitioning economies is demand for capital and insurance

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(Massey et al. 1998; Stark 1982; Taylor et al. 1996). As economic development disrupts subsistence or small-scale household production, households require capital to facilitate their transition to market-based production and consumption, and insurance to mediate risk while doing so. However, financial services are often lacking or inaccessible in developing economies. NELM theory views labor migration as a solution to this developmental dilemma, as migrant wages can be remitted or returned for investment and consumption at home, as well as used for risk management. More specifically, NELM theory proposes that migration and credit function as substitute solutions to a basic and crucial need for capital, and that migration serves as a substitute to insurance by providing a means of diversifying risk, in developing economies. By extension, both scholars and policy-makers have suggested that the development and expansion of credit and insurance markets in migrant-sending areas may stem out-migration (e.g., De Brauw and Rozelle 2008; Massey et al. 2002; Rozelle et al. 1999; Taylor et al. 1996; Zohir and Matin 2004).

Reviews of research on the causes of migration characterize absent or limited financial markets as “fundamental causes” of migration (Taylor et al. 1996, p. 405), but studies exploring the relationship between access to credit or insurance markets and migration are mostly lacking. Studies of the relationship between credit and migration are complicated by the very nature of the dilemma: because poor, rural households do not have access to credit and insurance, there is limited empirical basis on which to consider the suggestion that migration is a response to their absence. Research in support of NELM, therefore, has tended to focus on patterns of remittance use, return migration, and business development (Durand et al. 1996; Garip 2012; Lindstrom and Lauster 2001; Taylor 1992). Importantly, these studies suggest that for migration to substitute for financial services, some degree of investment opportunity should be present in the community of origin in the first place.

The dramatic expansion of access to financial services in the developing world offers a new opportunity to consider the ways in which migration and credit are related. Over the last two decades, microfinance institutions (MFIs) have expanded throughout the Global South, shifting the landscape of credit dramatically by offering formal credit in poor and rural areas of the developing world.<sup>1</sup> MFIs offer small, relatively low-interest loans (microcredit) directly to poor households with the goal of empowering individuals to invest in productive enterprise. A reduction in out-migration has been noted as a goal and expected outcome of microcredit programs (Zohir and Matin 2004).

In this paper, we use national data from Cambodia, a largely rural, developing country where both migration flows and formal credit have expanded in the last ten years, to examine whether migration and borrowing substitute for one another among households. We first examine whether households with loans from formal institutions are more or less likely to have members who have migrated away from

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<sup>1</sup> Microfinance refers to the range of financial services targeted for the poor, including but not limited to the provision of microcredit/micro loans. However, the term is often used to specifically refer to microcredit, which makes up the bulk of the services offered by MFIs. Throughout this paper, we use the term microcredit when referring specifically to the provision of loans by MFIs and NGOs, and microfinance when referring to the sector or the types of institutions offering these services.

the community. We then examine whether distance to the closest MFI, as a measure of access to microcredit, is associated with the household's migration status. Our findings show complementarity between migration and borrowing among households in Cambodia. Specifically, households with loans from formal institutions are more likely than households without these loans to have labor migrants. Moreover, households in villages with greater access to formal credit, regardless of their own borrowing status, are more likely to have migrant household members than households with less access to formal credit.

These results challenge the NELM hypothesis that migration is undertaken as a substitute for credit. We then address a series of possible explanations for our findings, each informed by NELM assumptions. First, loans may be too small to sufficiently substitute for migrant remittances. Second, households may not be borrowing for investment purposes, making migration still necessary. Third, migrants may not remit, making borrowing still necessary. Fourth, by earning wages in a different currency, migrants in international destinations may lessen household vulnerability to domestic financial crises, meaning that international migration may be used for risk diversification and domestic migration for access to capital. Finally, credit and migration may only substitute for each other in regions in Cambodia with enough infrastructure and development to allow for productive investment. In models testing each of the above, we continue to find that migration and formal credit are complementary in Cambodia. These patterns complicate our understanding of the relationship between credit and migration and raise questions about the degree to which migration and credit should be regarded as substitutes across the developing world.

Below, we review the background to our study, beginning with an overview of the theoretical and empirical connections between credit and migration, and then of the development of microcredit around the world and in Cambodia. We then describe our empirical analysis, followed by a description of results. We conclude with a discussion of the implications of our findings.

## **Background**

### **Credit and Migration in Theory and Research**

The expectation that migration may substitute for credit developed out of a critique of neoclassical economic theory as applied to migration. Neoclassical economic theory understands migration as arising out of geographic disparities in wages, such that labor flows out of labor-surplus, capital-scarce (low wage) markets and into labor-scarce, capital-surplus (high wage) markets (Lewis 1954). Micro neoclassical economics assumes that migration is a permanent decision made by individual rational actors who choose to migrate based on a cost–benefit calculation of net lifetime earnings across labor markets (Todaro 1969). By limiting its focus to labor markets, individuals, and permanent migration, neoclassical economic theory ignores several regularities in migration, namely that migrations are often temporary in duration, that large portions of migrant earnings are remitted to households in

origin, and that levels of emigration often increase as domestic wages are rising (Massey et al. 1994).

Responding to these limitations, New Economics of Labor Migration (NELM) theorists proposed that households, not individuals, make decisions about migration, that migration is a response to the condition of insurance and credit markets in addition to labor markets, and that migration serves multiple purposes beyond lifetime income maximization (Katz and Stark 1986; Stark 1981; Stark and Bloom 1985; Stark and Taylor 1989). Through the migration of one or more household members, households diversify their labor portfolio, which lessens vulnerability to local shocks such as drought or crop failure. Thus, household labor diversification through migration is a risk-minimization strategy that substitutes for inaccessible or underdeveloped insurance markets. Migrant remittances serve the additional purpose of providing capital for consumption and investment at home; as such, migration substitutes for underdeveloped or inaccessible capital and credit markets. Although this theory has been criticized on a number of levels, most notably by scholars who question the assumption of unified household decision-making (DeHaas and Fokkema 2010; Hondagneu-Sotelo 1994), it is arguably the most accepted economic theory of causes of migration out of contemporary developing economies (e.g., see Massey et al. 1993; Massey and Espinosa 1997).

Beyond the role that remittances play in risk diversification, migration as a specific substitute for inaccessible credit markets is “a basic prediction of NELM theory” (Wouterse and Taylor 2008, p. 627), and has been theorized with reference to both international and domestic (primarily rural–urban) migrations. In their seminal overview of the determinants of migration, Massey et al. (1998, pp. 24–25) state that in contexts where banking services are inaccessible, “migration becomes attractive as an alternative source of capital to finance improvements in productivity,” and that “the absence of consumer credit can create a strong motivation for short-term migration, given a sudden need to make a large purchase.” Thus, migration substitutes for capital and credit when households seek to invest or consume but cannot do so given underdeveloped or inaccessible capital and credit markets.

This theoretical argument is easily and often extended to policy recommendations suggesting that expanding access to credit (and insurance) markets could be used as a strategy to reduce out-migration from rural areas. For example, Katz and Stark (1986, p. 137) conclude that

The explanation of the rural-to-urban migration phenomenon has many policy implications. Suppose that in a... [less developed country] an institutional action aimed at reducing rural-to-urban migration is deemed desirable. ...If, as we shall suggest here, a main cause of rural-to-urban migration—a labor market phenomenon—is capital market imperfections, then policy to constrain migration should aim at enhancing access to, and improving the competitiveness of, capital markets.

Yet empirical support for this policy recommendation is largely based on patterns of migration and remittance use that are consistent with NELM rather than direct observations of the relationship between migration and access to credit. For

example, Taylor (1992) found that each dollar remitted to a community in Mexico increased household income by a factor of 1.85, and Durand et al. (1996) found that \$2 billion remitted to Mexico annually resulted in an additional \$6.5 billion in production. These multiplier effects are referenced to argue that remittances are used to loosen credit, capital, and risk constraints on households, and that they function to increase productive activity in sending communities in ways similar to financial services.

Other indirect evidence finds a pattern of Mexican migrant households who own property, land, or businesses in Mexican communities characterized by self-employment and low earnings, consistent with the NELM idea that households use migration to self-finance and/or self-insure (Garip 2012). However, these “NELM migrants” represented only 33 % of all first-time migrants observed in 124 Mexican communities between 1970 and 2000. Another study finds that investment opportunities are predictive of international migration, but not domestic migration out of Mexico, suggesting that migrants may use the U.S. wages to accumulate savings for investment in Mexico (Lindstrom and Lauster 2001). In another study, men from central–western Mexico were more likely to emigrate to the United States in years when the Mexican interest rate increased, which could reflect a substitution between the U.S. wages and costly loans in Mexico (Massey and Espinosa 1997). Research works on cash transfers, which may function as an alternative source of capital to bank loans or migrant remittances, find inconsistent patterns in relation to migration (Angelucci 2011, 2012; Stecklov et al. 2005).

This research suggests that NELM’s assertions about the relationship between credit and migration are only relevant to particular contexts, households, and individuals, even within developing contexts characterized by rural–urban and international out-migrations. But, the extent of the theory’s relevance is not yet clearly established. Most of the research testing NELM has been based on North–South migration flows, particularly Mexico–U.S. migration. Research on Mexico–U.S. migration has largely focused on one area in Mexico, the center–west region of the country, which, while itself socially and economically diverse, is economically more developed than other areas in Mexico, such as the southeast region. Some recent research has questioned whether NELM is relevant to urban Mexico (Fussell and Massey 2004) or to all migrants from the center–west region (Garip 2012). A better understanding of when, where, and why access to credit is related to the fact that migration is important not only for clarifying an academic debate on the causes of migration, but also for making sound development and migration policy.

In sum, NELM suggests that underdeveloped insurance and credit markets are fundamentally important drivers of migration, and this theoretical argument has been used to inform policy prescriptions to stem out-migration. The provision of microfinance to poor households in developing countries is one policy that has been suggested as a means to control rural out-migration (Zohir and Matin 2004). But empirical evidence on the relationship between access to credit and migration is limited, and the existing evidence suggests migration may only substitute for credit, and vice versa, in certain contexts. In areas where productive investment is high-risk and low-reward, access to capital may not sufficiently overcome the limits to household production in order to substitute for migration. In these areas, we may

expect households to find a less risky and more effective way to overcome the developmental dilemma: households engage in the emerging marketplace but through both labor migration and borrowing as complimentary subsistence strategies. We explore these ideas in Cambodia, a context where NELM theories of migration are relevant: pervasive rural-to-urban and a smaller stream of international out-migration primarily to Thailand accompany an expanding post-conflict marketplace. Moreover, in Cambodia the proliferation of MFIs in the last two decades has made formal credit accessible, affordable, and widespread. In line with NELM thinking, policy-makers have suggested that the expansion of credit access in rural areas will be a key aspect of curbing rural out-migration and facilitating development (IMF 2006). We describe the contemporary Cambodian context, and its specific experience with credit expansion in more detail below.

### **Cambodia's Development and the Expansion of Microcredit**

By traditional measures of socioeconomic development, Cambodia has been a poster child of post-conflict success. Since the early 2000s, Cambodia has been among the fastest growing economies in the world, with relatively stable macroeconomic conditions, significant improvements in per capita income, and corresponding gains in health and education indicators. Between 2000 and 2010, The World Bank reported that GDP growth averaged 8.2 %, making Cambodia the 15th fastest growing economy in the world over that period (Dixon et al. 2012). Cambodia achieved the Millennium Development Goal of halving poverty between 1993 and 2009, and has made similar gains in terms of human development (World Bank 2013).

In this context, high levels of migration are not surprising, as households adjust to this rapidly transforming social and economic environment. Internal labor migration has always been common in Cambodia, but has been increasingly important as a result of the country's rapid population growth, coupled with land grabbing and decreased agricultural productivity associated with soil deterioration (Maltoni 2007). It is estimated that more than a third of Cambodia's population are domestic migrants (Maltoni 2007). Over the last decade international migration has also grown in scope and importance. Its rate of net migration from 2005 to 2010 was -5 people per 1000 population, slightly higher than Mexico's (UN Population Division 2012). Thailand is the most common destination country for Cambodian emigrants.

Cambodia has been a target for a wide variety of development programs, but none so pervasive as microcredit. Developed in the late 1970s through the work of Muhammad Yunus and the Grameen Bank in Bangladesh, microcredit began as the provision of small loans to poor individuals. At its inception, microcredit was developed to create or expand income-generating activities and therefore provide a path out of poverty for borrowers (Bateman 2010). Lauded by both neoliberal reformers and those more explicitly focused on poverty reduction, by the 1980s, microcredit had become the anti-poverty intervention of choice for the international development community (Roy 2010). Between 2003 and 2008, the number of aggregate borrower served by MFIs increased by 21 % per year on average according to MIX Market, an organization that collects and reports data on MFIs.

During the same period, the average loan portfolio of MFIs reporting to MIX increased to 34 % per year (Gonzalez 2009). By December 2009, MIX recorded a global total of 1395 MFIs with over 86 million borrowers and a gross loan portfolio of over 44 billion USD (Gonzalez 2009).

Mirroring global trends, MFIs have expanded rapidly in Cambodia in recent years, dramatically altering access to credit. The first microcredit projects in the country began after the signing of the Paris Peace Accords in 1991 through the work of several international NGOs operating primarily with demobilized soldiers (Clark 2006; CMA 2010). With some initial success, these programs were soon funded by donors and investors and rapidly expanded as governments, donors, and the central bank began to incorporate microcredit into their plans for rebuilding the infrastructure and economy of the country (2010).

Today, Cambodia is among the top five countries in the world in terms of MFI penetration rates (Gonzalez 2010). Indeed, Bateman (2010, p. 101) suggests it is the ideal example of a “microfinance saturated country,” describing it as “a country whose financial sector is... dominated by MFIs and microfinance.” Traditional banks predominately serve the urban elite and small peri-urban middle class and are largely concentrated in Phnom Penh and a handful of provincial capitals (Allden 2009; CGAP 2009). In contrast, for rural Cambodians, who make up 80 % of the population, formal financial services are almost exclusively provided through MFIs (Allden 2009; CGAP 2009; Flaming et al. 2005).

The expansion of microcredit in Cambodia has been rapid. In 2004, thirteen MFIs operating a total of 180 branches in Cambodia reported to MIX Market.<sup>2</sup> By 2009, three times as many branch offices (577 total) were operating in the country via seventeen MFIs (MIX 2011). During this period, loans grew in size from an average balance per borrower of \$235 in 2004 to \$744 in 2009 (MIX 2011). Our analyses of loans reported in the 2004 and 2009 Cambodia Socio-Economic Surveys (CSES) show that loans also became more affordable, with monthly interest rates declining from an average of 7.4 % in 2004 to an average of 3.9 % in 2009. Similarly, growing numbers of households report utilizing formal loans. In 2004 only 22 % of indebted Cambodian households reported holding loan from a bank or NGO. By 2009, 63 % of indebted households reported one or more outstanding loans sourced from these institutions. As noted in a recent report by Cambodia’s leading development research institute, “lack of rural banking services for agriculture and small or medium agribusiness is no longer a barrier to farmers and traders accessing credit” (Nang 2013, p. 10).

MFIs offer a variety of loan products, including both individual and group lending as well as both long and short-term loans. Most typically, loan repayment is required on a monthly basis, though some lenders offer higher-interest loan products that allow borrowers longer repayment windows. While MIX Market states that 92 % of MFI loans are taken out for microenterprise (MIX 2010), both nationally representative data and recent MFI client surveys suggest otherwise. In household reports from the CSES in 2009, 46 % of all formal loans were primarily used for

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<sup>2</sup> These data are limited to MFIs who report to MIX Market, and which MIX estimates make up the majority of the microfinance sector. However, the real size of the microfinance sector is likely significantly larger. Clark (2006) estimates that perhaps upwards of 60 NGOs are also active in microcredit but do not report data to the government or international organizations.



household consumption. Only 40 % of all loans were primarily used for either agricultural or nonagricultural production/business. Similarly, a recent survey of MFI clients in microfinance-saturated areas suggests that clients primarily repay loans with wage labor and remittances, noting that only 35 % of borrowers said that profit from their productive activities was adequate to support loan repayment (Liv 2013). Such findings raise questions about the degree to which credit expansion is enabling meaningful investment opportunities.

Cambodia's context as a rapidly growing developing economy with massive migration and the saturation of microcredit make it an opportune context for considering the relationship between labor migration and credit access and use. We next describe our methods for doing so.

## Research Methods

We explore the relationship between formal credit and migration in Cambodia in three ways. First, we estimate the association between household indebtedness and household migration status, controlling for a set of variables associated with both credit use and migration. If borrowing and migration function as substitutes, we would expect a negative association between indebtedness and migration; i.e., indebted households should be less likely to have current migrants than households without debt. Second, we estimate the association between access to formal financial services and household migration status, net of household indebtedness. If limited access to financial services is a motivation for migration, we would expect households with greater access to be less likely to have migrants. Finally, we examine variations in the relationship between household migration and borrowing by characteristics of the loan, the migration, and the sending community context in order to better understand when, why, and where households engage in borrowing and migration.

We use cross-sectional data from a single year, meaning that we cannot identify a causal relationship or time-ordering among borrowing and migration. That is, among households that are both borrowing and migrating, we do not know whether households borrowed or migrated first or what led them to do one or the other. Similarly, for any associations we observe, we cannot determine whether migration causes borrowing, whether borrowing causes migration, or whether these are both related to underlying common causes such as the economic change NELM refers to as creating the need for capital in rural transitioning areas. Regardless of the mechanism, a positive association between migration and formal borrowing is inconsistent with the argument that they are substitute solutions to the development dilemma. We return to this issue of causation, and possible mechanisms underlying borrowing and migration among households—i.e., why households might engage in both behaviors as opposed to using them as substitutes—in our discussion.

## Data

We use data from the 2009 Cambodia Socio-Economic Survey (CSES), conducted by the National Institute of Statistics at the Cambodian Ministry of Planning and



supported by Statistics Sweden and the Swedish International Development Cooperation Agency.<sup>3</sup> The CSES is a nationally representative sample of households that includes questions about demographic characteristics and economic activities. Useful for our purposes, the CSES includes questions on household liabilities and outstanding debts, as well as current migrations of household members. The survey took place over the course of twelve months from January to December 2009, and all households were interviewed by research teams in multiple face to face interviews. Village-level data were also collected, including information on village demographic, economic, and environmental characteristics. The 2008 General Population Census was used as a sampling frame. The sample was selected as a three-stage cluster sample with villages in the first stage, enumeration areas in the second stage, and households in the third. The sampling frame was stratified by province and urban and rural designations. All analyses were weighted to adjust for this design using household probability weights.

The 2009 sample included 11,974 households and 720 villages. We used casewise deletion to eliminate the 312 cases (2.6 % of sample) missing data on one or more variables in our analysis.

## Measures

### *Household Labor Migration*

Our key dependent variable is whether or not the household has a current labor migrant.<sup>4</sup> Migrant information is restricted to household members above the age of 15. Labor migrants are those whose purpose of migration was to look for or to take a job, as opposed to migration for school, marriage, or other reasons. In subsequent tests, we further differentiate between migrant households receiving remittances and between households with migrants in domestic destinations versus those in international destinations. While the CSES does not capture detailed migration timings, prior research suggests that much international migration and some internal migration is circular and/or seasonal (MOP 2012; Chan and Acharya 2002; Bylander 2013).

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<sup>3</sup> The CSES was also collected in 2004, but in that year, the survey did not collect information about current migration, so we cannot use it in this analysis.

<sup>4</sup> The CSES did not collect adequate information on the timing of migration or loans in order to assess which came first among households with both. Specifically, timing information for migrants is measured in years, whereas length of loans is reported in months. Only current loans are reported, and most microloans have year-long terms, so we cannot observe order even among households with migrants who departed in the past year. Timing information might suggest an explanation for an association between migration and loans—for example, if households borrow first and then migrate, they may be funding migration with loans. If households migrate first and then borrow, they may be financing a loan with remittances. Lacking detailed timing information, we cannot adjudicate between these possibilities in the CSES. Assessing whether households with current loans have current migrants is still an appropriate test of NELM theory, given that the theory presents credit and migration as substitutes. Evidence that households engage in both borrowing and migration, regardless of the time order between the two, is inconsistent with the theory.

### *Household Indebtedness*

Our key household-level independent variable is whether the household has one or more outstanding loans sourced from a formal institution, defined as banks or nongovernmental organizations. Both NGOs and banks provide microcredit in Cambodia, although banks also offer traditional loans. However, microcredit predominates even among banks, and loans from banks and NGOs do not differ in terms of average amount or interest rate. In subsequent tests, we further differentiate by loan amount and by loan purpose.

### *Access to Credit at the Village Level*

We examine the role of access to credit with a measure of distance in kilometers to the closest formal financial institution, which was reported in village surveys in the CSES. This variable ranges from 0 to 100 km. Seventeen percent of villages had a bank or loan/credit unit within village limits, 50 % of villages reported a bank/credit office within 3 km of the village, and 75 % of villages reported an office within 10 km.

### *Household Control Variables*

We include several socioeconomic controls that are associated with both borrowing behavior and migration, including measures of wealth, assets, human capital, and vulnerability. Our household wealth index measures household resources. In the absence of adequate income measures and in a context such as rural Cambodia where income does not adequately measure wealth, wealth indices are commonly used to assess inequalities across households (Filmer and Pritchett 2001). We constructed a wealth index following the methodology used by the Demographic Health Survey and others (Rutstein and Johnson 2004). The index is a count of household assets, including ownership of a car, bicycle, motorbike, household items and furniture, and livestock. In order to ensure that the wealth index reflects differences between poor rural households as well as the differences in wealth between urban and rural households, we construct separate indices for rural and urban areas (see Rutstein 2008). The indices are constructed using principle component analysis; Chronbach's alpha for the rural wealth index is .671 and for the urban wealth index is .849, indicating high internal reliability. The sample is divided into quintiles, from the poorest (1) to the wealthiest (5). Rural and urban households are then combined by quintile, such that the poorest urban households and poorest rural households together form the poorest quintile, the wealthiest rural and wealthiest urban households together form the wealthiest quintile, and so on.

We include an additional measure of vulnerability, specifically whether the household reports that there were days or weeks in the past year when the household had so little food that household members went hungry. We also include a dichotomous indicator of whether the household head completed lower secondary school (Grade 9) or not. Finally we include dichotomous indicators of whether the household owns agricultural land, and whether the household owns or operates an enterprise.

Additionally, we include two community-level variables that take into account factors associated with migration and credit access: urban/rural status and marginality. Urban/rural status is based on the Cambodia's National Institute of Statistic's classifications at the commune level. Communes (*khum*) are a third-tier administrative unit, one level smaller than a district (*srok*) and one level bigger than the village (*phum*). Communes across Cambodia were defined as urban or rural according to the following criteria: urban communes have a (1) population density exceeding 200 per square km, (2) have a percentage of male employment in agriculture below 50 %, and (3) have a total commune population exceeding 2000. Based on this definition, 80 % of households in Cambodia live in rural communes.

Village marginality captures the degree of economic activity, development, and infrastructure in a village using data from the 2009 CSES village survey. The measure includes the distance (number of kilometers) the village is from a range of resources: the district center, the nearest primary school, lower secondary school, upper secondary school, the nearest market, agricultural extension worker, food shop or restaurant, store selling manure/agro-chemicals, and the nearest bus and taxi stops. The index also includes the percentage of households in the village that have public or private electricity, the percentage of households that have piped water in their dwelling or on the premises, the presence of a motorable road, and the presence of a commercial or industrial enterprise (e.g., factory, hotel, restaurant or company employing more than ten persons) in the village or within ten km of the village. Chronbach's alpha for this index is .76, indicating high internal consistency.

## Methods

We estimated Chi square tests for equal distributions and t-tests for equal means, comparing migrant and nonmigrant households on all variables in our analysis. We then estimated logistic regression models of the log-odds of migration regressed on household borrowing and all control variables. Specifically, the model is represented by the following equation:

$$\log \frac{\pi}{1 - \pi} = \alpha + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k \quad (1)$$

where  $\pi$  is the probability of a household having a labor migrant and  $x_1$  through  $x_k$  represent all variables in the model. Standard errors are adjusted for clustering at the village level in all regression models. Results from analysis using multilevel models were similar to those presented.

## Results

### Household Characteristics

Table 1 reports the characteristics of households, comparing households with labor migrants to households without any labor migrants. Just over 1000 households have labor migrants, a rate of 9 %. If migration and credit were working as substitutes,

**Table 1** Sample characteristics of Cambodian households

	Migrant households	Non-migrant households
Holds a formal loan (%)	26.1***	18.9
Mean distance to credit provider (km)	6.8***	8.5
<i>Sociodemographic characteristics</i>		
Wealth index (%)		
Poorest	12.0***	17.9
Poor	19.1	18.9
Middle	23.5	20.0
Wealthy	27.8	20.5
Wealthiest	17.6	22.8
Urban (%)	14.5***	20.0
Secondary education (of head; %)	13.0**	15.8
Food insecurity (%)	14.0	16.0
Land ownership (%)	71.5*	69.3
Business ownership (%)	34.8	35.8
<i>Village characteristics</i>		
Marginality		
Least Marginal Quartile	20.4***	26.1
Middle Quartiles	57.4	48.0
Most Marginal Quartile	22.2	25.9
Sample size	1019	11,662

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < .001$  based on Chi square and  $t$ -tests comparing households with labor migrants and those without

Source: 2009 CSES

we would expect migrant households to be less likely to hold loans. Similarly, we would expect that migrant households would have less access to formal credit. Instead, we find the reverse. Households with labor migrants are more likely than households without migrants to have formal loans, and households with labor migrants are on average *closer* to credit offices. While 19.4 % of all Cambodian households report holding an outstanding formally sourced loan, more than 26 % of households with labor migrants report holding these loans. The average Cambodian household is 1.5 km farther away from a source of formal credit than the average Cambodian household with a current labor migrant.

Table 1 also highlights that migrant households have somewhat different sociodemographic characteristics. In general, households with labor migrants are more rural, have household heads with lower levels of education, and are more likely to come from the middle of the economic spectrum. These patterns align for the most part with widely accepted arguments that the poorest and wealthiest are least likely to migrate, and that migrants are more likely to come from rural areas (see De Haan and Yaqub 2009). Migration is linked to lower levels of education in Cambodia, which to some extent contradicts evidence that migrants tend to be

higher skilled than their nonmigrant counterparts (e.g., De Haan 1999). Here a word of caution is in order, as our education variable is a measure of whether the household *head* has attained a relatively high level of education. An individual level analysis might find an association between migration and human capital. Finally, we observe that migration is less common out of more marginal villages.

Table 2 shows the results of logistic regression models that control for various household characteristics as well as village marginality. Because more marginal villages are also less likely to have a source of formal credit available, it is important to control for marginality when assessing the association between access to credit and migration. None of the controls fully mediate the bivariate associations we observe for either access to, or use of, formal credit. We still see that households who are *closer* to credit providers are significantly more likely to have migrant household members. Specifically, with each additional kilometer of distance from the village to the nearest credit provider, the odds of households having a labor migrant are reduced by 3–4 %. Holding all other variables at their means, the predicted rate of migration in villages with an MFI within their borders is 9.2 %; for villages with an MFI 5 km away, the rate is 8.1 %, and for villages with an MFI 20 km away (10 % of villages), the rate declines to 5.6 %. Similarly, the bivariate relationship we observe between use of formal credit and migration is not fully

**Table 2** Odds ratios from logistic regressions of household migration status regressed on (1) distance to credit provider, (2) household formal loan status, Cambodian households 2009, and (3) full model

	(1)		(2)		(3)	
	OR	(SE)	OR	(SE)	OR	(SE)
Formal loan	1.41***	(.12)			1.37***	(.12)
Distance to credit provider (km)			0.97***	(.00)	0.97***	(.01)
Village marginality	0.87*	(.05)	1.08	(.08)	1.08	(.08)
<i>Household controls</i>						
Household Wealth index (ref = wealthiest)						
Poorest	0.71*	(.12)	.70*	(.12)	.68*	(.12)
Poor	1.03	(.17)	1.01	(.16)	.98	(.16)
Middle	1.19	(.18)	1.19	(.18)	1.13	(.17)
Wealthy	1.42*	(.21)	1.41*	(.20)	1.36*	(.20)
Urban	0.60**	(.09)	0.63**	(.10)	.64**	(.10)
Secondary education (of head)	0.82†	(.10)	0.81†	(.09)	.82†	(.10)
Food insecurity	0.90	(.10)	0.92	(.10)	.91	(.10)
Land ownership	0.94	(.09)	0.91	(.09)	.92	(.09)
Business ownership	0.90	(.08)	0.90	(.08)	.89	(.08)
Sample size	11,662		11,662		11,662	
Log pseudo likelihood	−3,606,078		−3,597,555		−3,589,381	

†  $p < 0.1$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < .001$

Source 2009 CSES

mediated by household controls or village marginality. Model 3 indicates that households with formal loans are 37 % more likely to have migrant household members, all else equal.

Next, we examine potential variation in the relationship observed between household borrowing and migration. Table 3 presents odds ratios from seven logistic regression models, all adjusted for the full set of controls presented in Table 2. Specifically, we examine whether the relationship between formal borrowing and migration varies by loan size, loan purpose, remittance behavior, migration destination, and village marginality.

The first model in Table 3 presents the odds of migration for households by loan size. It is possible that most formal loans in Cambodia simply are not large enough to adequately allow for meaningful investment locally. The median formal loan in the CSES is \$250, and ten percent of formal loans are less than \$50. If loans are too small, households may use microcredit and migration in tandem to meet local investment and consumption needs. If this is the case, then we might expect that the positive relationship we observe between borrowing and migration is driven by households with small loans, those that cannot adequately substitute for remittances. To offer some sense of what might be a “large enough” loan (e.g., for meaningful

**Table 3** Odds ratios from seven logistic regressions of household migration status on household loan status

(1) Odds of labor migrant <i>by loan size</i> ( $n = 11,662$ )	
Formal loan of <\$50	1.07
Formal loan of \$50–200	1.35*
Formal loan of \$200–500	1.51**
Formal loan of >\$500	1.17
(2) Odds of labor migrant <i>by loan purpose</i> ( $n = 11,662$ )	
Formal loan for investment	1.39**
Formal loan for consumption	1.38**
Formal loan for distress	1.14
(3) Odds of <i>remitting labor migrant</i> ( $n = 11,662$ )	
Any formal loan	1.42***
(4) Odds of <i>domestic labor migrant</i> ( $n = 11,662$ )	
Any formal loan	1.58***
(5) Odds of labor migrant, <i>low marginality villages</i> ( $n = 2987$ )	
Any formal loan	0.90
(6) Odds of labor migrant, <i>middle marginality villages</i> ( $n = 5947$ )	
Any formal loan	1.27*
(7) Odds of labor migrant, <i>high marginality villages</i> ( $n = 3028$ )	
Any formal loan	1.98***

All models include the full set of controls presented in Table 2. Model (1) categorizes loans by size; Model (2) categorizes loans by purpose; Model (3) limits the dependent variable to remitting migrants; Model (4) limits the dependent variable to households with domestic labor migrants; Model (5)–(7) limit the sample by village marginality

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < .001$

Source: 2009 CSES

productive use) in Cambodia, several points of reference are useful. In 2009, the World Bank reported per capita Gross National Income in Cambodia to be \$690 USD. In the same year, average monthly total expenditures in rural areas were \$52 per person, with the lowest quintile of the rural population expending an average of \$23 per person per month and the highest rural quintile an average of \$104 per person per month (CSES 2009). In terms of purchasing power, in 2009, the average price of a young crossbreed female cow was between \$134–\$250 (Young et al. 2013), and estimated costs of pig breeding suggest a required investment of 15 and 45 dollars/pig (including the purchase of piglets and cost of feed/medicine over the breeding period, Choeun and Sros 2008). In 2009 agricultural land in rural areas could be obtained for between \$1000 and \$3000/hectare (Lohr 2011), and used motorbike prices ranged between \$200–\$500. Thus the median loan of \$250 is a significant amount—almost a third of average annual income, significantly more than monthly per person expenditures, and sufficient for investment in productive, income-generating assets or consumption of durable consumer goods.

To consider whether only sufficiently large loans substitute for remittances, we analyzed loans by size, differentiating between formal loans of less than \$50, between \$50 and \$199, between \$200 and \$500, and greater than \$500. We do not find that loan size moderates the relationship. Households with loans between \$200 and \$500 are the most likely to have a migrant household member, but at all loan sizes, the association with migration is positive (Model 1; Table 3).

In the second model in Table 3, the odds of labor migration are estimated by loan purpose. NELM is specific to capital for investment purposes and credit for consumption, and thus it may be the case that households are borrowing and migrating only when loans are taken out for purposes other than investment, for example for distress. The results show that purpose of loan does not matter either. Regardless of the purpose of the loan, the odds of migration are higher among borrowing households than among nonborrowing households. Households that borrow for investment have 39 % greater odds, and households that borrow for consumption have 38 % greater odds, of having a labor migrant than households that do not have outstanding loans (Model 2; Table 3).

In the third model presented in Table 3, we consider the role of remittances by limiting the dependent variable to households with labor migrants who currently send remittances. It is possible that households borrow when migrants are unsuccessful at finding work and are not remitting, in which case we would not observe the same positive relationship between borrowing and migration in the case of successful—i.e., remitting—migrants. However, we still see a significant, positive relationship between borrowing and households with remitting migrants: households with formal loans are 43 % more likely to have a remitting migrant than households without loans (Model 3; Table 3). We also estimated a multinomial logistic model predicting no migrant, nonremitting labor migrant, and remitting labor migrant, and the results were similar—the association between formal credit use and migration is strongest for households with labor migrants sending remittances, although those with loans are also more likely than those without to have labor migrants who do not send remittances (results not shown but available upon request).



The fourth model in Table 3 considers whether the relationship we see is moderated by the destination of migrants. This explores the idea that migration serves as a risk diversification strategy rather than as access to capital. NELM suggests that households use migration to substitute for both insurance and capital. Migration reduces risk by diversifying income sources; international migration is a superior risk diversification strategy (relative to domestic migration) because migrant wages are in a different currency and therefore less subject to local inflation and because the employment/wages from foreign employers are less subject to local economic crises. Therefore we might expect that the positive association between labor migration and borrowing would only be observed among households with international migrants. However, the results of Model 4 show that the relationship between borrowing and migration is even stronger when we limit to migration to domestic destinations—households with formal loans are 60 % more likely to have labor migrants in domestic destinations than households without formal loans (Model 4; Table 3). We also estimated a multinomial logistic regression predicting no labor migrants, domestic labor migrant, and international labor migrant and found that loans are associated with domestic work migration but not international labor migration (results not shown but available upon request). Households with formal loans are no more or less likely to have international labor migrants than households without these loans.

Finally, in the last three models in Table 3 we examine the relationship between borrowing and migration separately by level of village marginality. The ability to productively invest depends on the local context—the local economy, resources, and infrastructure. In Mexico, scholars have argued that NELM is most relevant to places with some degree of economic activity (Lindstrom and Lauster 2001). Thus, we might expect that households are using migration and loans as substitute solutions to a need for investment capital only in places where investments are feasible—the least marginal places. If this were the case, the positive relationship between borrowing and migration would only be observed with the least marginal villages.

Thus in these final models (Models 5–7; Table 3) we examine the relationship between formal credit and labor migration in three groups of villages—those in the least marginal villages (bottom quarter of marginality index), those in villages from the middle 50 % of the marginality index, and those in the most marginal quarter of villages. To offer a sense of what marginality means in real terms, among the *least marginal* (i.e., most developed) villages, 85 % of have a commercial enterprise employing over ten people. On average two-thirds of households have piped water and 85 % of households have electricity. All of these villages have motorable roads. On average, they are within 1–4 km of markets, schools, district centers, bus stops, and shops selling manure/agro-chemicals.

In contrast, the *most marginal* (i.e., least developed) villages are on average 5 km from the nearest bus stop, 22 km from the nearest upper secondary school, 23 km from the district center, 18 km away from the nearest market, and over 20 km away from the nearest store selling manure/agrochemicals. Only 82 % of these villages have a motorable road. On average, in these villages 1.1 % of households had piped in water and less than 3 % of households have public or private electricity. Fifteen

percent of these *most marginal* villages have a commercial enterprise employing more than ten people.

The findings indicate that the positive association between borrowing and migration is strongest in the most marginal villages of Cambodia, where households holding a formal loan are more than two times more likely to also have a labor migrant. In the middle 50 % of villages by marginality, households with loans have 27 % greater odds of having a labor migrant. In the least marginal villages, the association is negative, although not significantly so.

## Discussion

An important theory of the causes of migration in developing economies, the new economics of labor migration (NELM), proposes that households use migration to substitute for inaccessible or absent financial services, the need for which arises as a result of economic development. This theory has often been used to recommend that migration policy include the provision of low-cost credit to poor households, such as by Massey et al. (2002, p. 162) who argue that “the extension of banking services... provi[des]... a means of financing large-ticket consumer purchases without having to resort to international migration.” Advocates of microcredit also suggest that expanding access to formal credit will reduce out-migration. This suggestion has been made explicit in the Cambodian context in the country’s Poverty Reduction Strategy Paper, as well as in the mission of some MFIs (IMF 2006; CBIRD 2014).

Research testing these ideas in the migration literature is mostly based in Mexico and has suggested that the theory may only be relevant to particular contexts. We used household survey data from Cambodia to investigate whether migration acts as a substitute for credit in a context where microcredit has expanded rapidly with the explicit purpose of reducing out-migration, among others (IMF 2006; CBIRD 2014). Inconsistent with this expectation, we found that households with greater access to financial services are more likely to have labor migrants than households with less access. Cambodian households are not substituting formal credit for migration; rather, households that are borrowing are also migrating. This relationship holds even when we look only at relatively large loans, those used for productive purposes, and when we consider only households with migrants who remit. The relationship is strongest for households with domestic migrants and among households located in the most marginal locations.

Our analysis offers no suggestion of a causal relationship between borrowing and migration. Indeed we caution against causal interpretation and suggest that any of the following mechanisms could explain the association: direct causation (households borrow to migrate), reverse causation (households migrate in order to use remittances to repay debt), or spurious associations (other factors explain both migration and borrowing). Recent qualitative studies find support for the first two mechanisms. First, qualitative research has documented that households use formal loans to finance the costs of migration, a pattern that has been documented in Cambodia and in other microfinance-saturated communities (Chan and So 1999; Stoll 2010; Bylander 2014). While bank and MFI policies in Cambodia generally do not support loans to be used to

finance migration, in areas where migration is common, loan officers have noted that loans have been used to cover migration costs (Bylander 2014). Second, households with relatives already away and regularly remitting may view formal credit as an advance on remittances to come, a pattern which has also been identified both within and outside of Cambodia (Duffy-Tumaszc 2009; Bylander 2014). Qualitative research on microcredit in the Cambodian context has suggested that use of formal credit, and the resulting indebtedness, can lead to distress migration (Ovesen et al. 2014; Bylander 2014). Among surveys of microfinance clients in credit-saturated areas in Cambodia, the migration of a family member was noted as a key way that households cope with overindebtedness (Liv 2013). It is also possible that there are unobserved characteristics of households that lead to both migration and borrowing, such as risk-taking.

Moreover, our data offer limited ability to distinguish variation in households engaging in both migration and borrowing, beyond economic status. Critiques of NELM have highlighted that gender, the life course stage of households, and other social and family dynamics are important in shaping migratory decision-making (De Haas and Fokkema 2010). While we are unable to consider how such factors mediate the migration-borrowing relationship we observe in the CSES, this is an important step for future research.

There is a clear need for further research clarifying the causal mechanisms underlying the relationship between credit and migration in developing contexts. However, by triangulating our work with ethnographic and qualitative findings in Cambodia, the most likely interpretation of our findings is that within marginal contexts, households are likely to struggle putting credit to use in secure, profitable ways. Marginal areas in Cambodia are highly risky even for traditional livelihood strategies (Bylander 2013). They are places where environmental shocks are frequent, infrastructure is poor, resources are increasingly privatized, corruption is rife, and legal rights are lacking. In such contexts, any form of capital—be it from formal credit or migrant remittances—may be difficult to profitably invest. Thus, migration and credit become complements, rather than substitutes.

In other words, our findings are consistent with others showing that credit and migration may only operate as substitutes in places with clear opportunities for productive investment in the first place. Taylor et al. (1996) indirectly suggest a similar argument with regards to the development potential of remittances, noting that “schemes to harness international migrant remittances for local development are destined to fail if governments do not create an economic environment that is conducive to investment in productive activities at home.” Presumably, if remittances cannot serve productive purposes given a limited economic environment, neither can credit. Indeed both qualitative and quantitative research in the Cambodian context suggests that credit is primarily used as a coping strategy, in part due to the lack of profitable opportunities in rural areas (Bylander, forthcoming). Such patterns are also evident in the CSES, which shows that formal loans are *not* primarily used for productive investment, despite the claim of MFI institutions that the vast majority of loans are given for such purposes. However, our analysis shows that even in the least marginal places of Cambodia—those where investment opportunities are most available, households are not substituting loans and migration.

Complementarity between migration and credit calls into question policy prescriptions that to reduce out-migration, capital markets should be made more accessible and competitive. This may be true only in places where productive investment is feasible and profitable in the first place. In places like Cambodia, particularly the most marginal regions within Cambodia, increased access to credit may not only fail to reduce out-migration but actually generate migration, as households use migration and loans as dual coping strategies, as households use loans to finance migration, and as households use migration to finance debt. This is not to suggest that capital markets should not be made accessible and competitive in places like Cambodia, but that this policy should be accompanied by investments in rural development in order to create opportunities for the productive investment of credit and remittances.

Our results are also inconsistent with the stated goals of microfinance, which intend to make loans for income-generating investments that last beyond the life of the loan and as such reduce poverty and foster development. The rapid expansion of microfinance in the last three decades reflects optimism that the conditions of poverty and underdevelopment in the Global South can be ameliorated by credit and the kinds of sustainable microenterprise it can finance for creative and enterprising households. Yet recent qualitative studies of microfinance across the developing world have strongly challenged this expectation, pointing out that rural households often use microcredit for basic household needs rather than productive investments (Dichter 2007; Rahman 1999; Bateman 2010), that even where they invest in microenterprise, rural households may struggle to make a profit and repay debts (Liv 2013), and that the kinds of investments rural households are most equipped to successfully invest in are unlikely to provide the immediate and regular profits needed for MFI repayment schedules (Pellegrina 2011). These have all been identified in the Cambodia context (Liv 2013; Phlong 2009; Ovsen et al. 2014; Bylander 2014). Thus while microcredit has expanded in Cambodia, rural farmers often remain fearful of being unable to repay loans, struggle to do so, and may see microcredit more as a coping strategy than as a path to productive investment (Nang 2013; Liv 2013; Fitzgerald and Sovannarith 2007). Our results resonate with the above work by highlighting that households using formal credit are often engaging in labor migration. To the extent that MFIs see their mission as providing sustainable, income-generating activities at home, our results reinforce existing concerns and questions about this solution.<sup>5</sup>

Finally, our findings reinforce the idea that neither migration nor credit are “things apart,” that is they are all *responses* to preexisting and dynamic conditions of development, rather than separate from development processes (Skeldon 2008:14; see also De Haas 2010). In other words, we challenge the policy prescription borne from NELM theory, that shifting access to credit is likely to substantively alter migration patterns, at least in places like rural Cambodia, without substantive improvement in structural conditions first. While this may indeed be the case in areas where credit can be diverted into profitable, low-risk, and secure

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<sup>5</sup> Most MFIs in Cambodia note in either their vision or mission an interest in providing loans for income generation, microenterprise, or self-employment. For example CBIRD, an MFI located in the northwest of the country, explicitly states on its website that part of its mission is “to provide an alternative to high risk urban migration by generating opportunity in rural areas” (CBIRD 2014).

income-generating opportunities, in the kinds of insecure environments that characterize much of the rural developing world, it seems unlikely that the expansion of access to credit alone will serve either to shift migration patterns or to promote sustainable growth. In such areas, households are disrupted and displaced by economic and social change associated with development, but strategies of adjusting to it—through borrowing or migrating to invest or manage risk at home—are untenable given limited opportunities for such strategies to be effective. Our study thus resonates with others noting that the uneven process of development results in multiple uses and meanings of migration, with the additional observation that this is also true of low-cost credit.

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