Migration, Remittances and Entrepreneurship: The Case of Rural Ecuador

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ABSTRACT

Using data from the Living Standard Measurement Survey 2005-2006 for Ecuador, this paper analyzes the impact of migration and remittances on the likelihood of rural households owning a business. The results show that neither migration nor remittances have any effect on the odds of a household owning a rural business. Instead, education, credit and access to services are positively correlated with the probability of owning a rural enterprise. Contrary to expectations, empirical endogeneity tests (Smith-Blundell) fail to reject the null hypothesis of exogeneity of migration, remittances and average town remittances with respect to the likelihood of business ownership.

Keywords: 1. international migration, 2. remittances, 3. rural entrepreneurship, 4. Ecuador, 5. South America.

Migración, remesas y espíritu empresarial: El caso del Ecuador rural

RESUMEN

Con datos de la "Encuesta de condiciones de vida (ECV) 2005-2006", este artículo analiza el impacto de la migración internacional y las remesas en la iniciativa emprendedora en el Ecuador rural. Los resultados sugieren que ni la migración internacional ni las remesas afectan la probabilidad de que los hogares rurales ecuatorianos posean un negocio familiar. En cambio, otras variables como la educación, el crédito y la disponibilidad de servicios básicos tienen un efecto positivo en la probabilidad de que un hogar rural posea un negocio. Contrariamente a lo esperado, el test Smith-Blundell no pudo rechazar la hipótesis nula de exogeneidad de la migración internacional y las remesas respecto de la probabilidad de poseer un negocio rural.

Palabras clave: 1. migración internacional, 2. remesas, 3. iniciativa emprendedora, 4. Ecuador, 5. Sudamérica.

Introduction

Inspired by the significant increase in the volume of remittances flowing into developing countries in the last decade, a number of researchers and organizations have repeatedly highlighted the potential of international money transfers to drive development in migrant sending countries (Inter-American Development Bank, 2006; Ratha, 2003; The World Bank, 2006). Within such research spheres, it is widely accepted that remittances can significantly contribute to the economic development of sending countries by maintaining macroeconomic stability, reducing poverty and inequality, easing consumption for remittance recipient households, increasing investment in health and education, and promoting small business creation. Nevertheless, it has also been said that the impact of remittances on development could be greater if a larger share of them were invested in productive activities. If remittances were invested, non-remittance recipients could also benefit through the dynamization of local economies and job creation (Inter-American Development Bank, 2006).

Several development practitioners (Lanjouw, 1999; Lanjouw and Lanjouw, 1995) have posited the concept of promoting entrepreneurship as a development intervention able to prompt development in rural regions. Increasing the number of entrepreneurs may boost development in rural areas by providing local residents with off-farm jobs, diversifying local economies, increasing tax revenues for the public sector, promoting the use of local resources, and raising living standards within communities. In the case of Ecuador, Lanjouw (1999) argues that non-agricultural activities offer a way to leave poverty and that an increase in off-farm jobs is associated with a decline in income inequality.

However, rural entrepreneurs in developing countries generally face several constraints such as poor infrastructure and services, deficient education schemes, and lack of credit for business creation. These intrinsic problems critically reduce the odds of success for businesses in rural areas. In this regard, Lanjouw and Lanjouw (1995) list lack of credit as one of the greatest drawbacks

for rural business creation. For migrant households, such financial limitations can be overcome by using remittances as a source of capital for productive activities (Lucas, and Stark, 1985; Taylor, 1999). Although migrant households themselves do not invest, the demand for goods and services that comes together with remittance flows can drive local entrepreneurship and employment generation (Durand, and Massey, 1992; Taylor, 1999). In this respect, Massey and Parrado (1998) state that international migration may impel business creation in two ways; by providing migrant households with investment capital and by stimulating the demand for goods and services due to the aggregate effect of remittances arriving in sending regions.

In the case of Ecuador, the inflow of remittances has grown substantially in the past decade, reaching 3 088 million US dollars in 2007[1] when they accounted for seven percent of the gross domestic product (GDP). Despite these figures, very little empirical research has been conducted to analyze the impact of remittances on entrepreneurship. The literature on this topic is restricted to a handful of qualitative studies addressing the low share of remittances invested in productive activities. By way of an example, the Inter-American Development Bank (2003) shows that only eight percent of remittance receivers in Ecuador used the money for entrepreneurial activities. Similar figures are reported by López, and Villamar (2004) for the city of Quito and by Sánchez (2004) for rural communities in the province of Loja. This aversion to invest may be caused by the small scale of the transfers, uncertainty about the country's future and widespread distrust about the financial system[2] (Inter-American Development Bank, 2003). Other than showing the average expenditure patterns of

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[1] This amount dropped to 2 822 million US dollars in 2008 as a result of the world financial crisis which reduced incomes and job opportunities for Ecuadorian migrants in the United States and Spain.

[2] In the late 1990s, Ecuador experienced one of the worst economic crises in its history. One of the outcomes of this crisis was the closure of several banks and financial institutions with the consequent losses for depositors who, in many cases, lost all their savings. This was one of the main reasons that triggered the numbers of international migrants from Ecuador.

remittance recipients, these studies do not shed much light on the impact of migration and remittances on entrepreneurship.

This paper analyzes the effects of migration, household remittances and average remittances per household at the town level on business ownership in rural Ecuador. In order to answer this question, it estimates the likelihood of a household owning a business by means of a probit model. Contrary to expectations, the Smith-Blundell test failed to reject the null hypothesis of exogeneity of migration and remittances with regard to the outcome variable studied (Smith, and Blundell, 1986). In addition to potential endogeneity issues, the results of this study suggest that neither migration nor remittances play any role in the odds of a household owning a business. In addition to this introduction, this paper provides a literature review of the impact of the links between migration and investment on productive activities followed by a section describing the data and variables. The methodology is subsequently explained and the results discussed before the conclusions are presented.

Migration, Remittances and Investment in Productive Activities

This section provides the theoretical framework required to understand the relationship between migration/remittances and entrepreneurship and offers a review of the literature on the topic.

The New Economics of Labor Migration (NELM) (Stark, and Bloom, 1985; Stark, and Levhari, 1982) is a good starting point for studying the effects of migration and remittances on sending countries. Whereas in previous research (the neoclassical theory) migration is regarded as an individual decision, in NELM the decision making unit is the household, which will share the costs but also the returns of migrating. Another advantage of NELM over the neoclassical theory of migration is that it takes into account remittances and their effects on migrant households. NELM links the causes and consequences of migration in such a way that both positive and negative effects on sending economies are revealed (De Haas, 2007). NELM holds that migration is part of a

household strategy designed to cope with the credit and insurance market failures often prevalent in developing countries. Through remittances, migrant households are not only able to reduce risks by diversifying their income sources but also to access new technologies that allow them to raise productivity (Taylor, 1999). Thus, in the absence of efficient credit and insurance schemes, migrant households are able to diversify their incomes (*i.e.* by investing in entrepreneurial activities) and at the same time to be protected from income risk.

In the context of NELM, migrants not only remit with the aim of supporting relatives left behind (altruistic motivation) but also for the purpose of obtaining self-benefit (self-interest). In this respect, Taylor (1999) implies that households and migrants are attached by informal agreements for mutual benefit and income insurance. By way of an example, Lucas, and Stark (1985) find that migrants from Botswana tended to remit more when the expectation of being favored in future bequests is higher. Conversely, the authors did not find that migrants remit more to lower income households, which does not support the hypothesis of pure altruism. Another distinctive claim of NELM is that remittances are not only beneficial for receiver households but also for the whole community. This happens because of the multiplier or indirect effects of remittances at the community level. In this order of ideas, Djajic (1986) states that if the volume of remittances flowing into a community exceeds a certain threshold, the rest of the population also benefit from their effects despite the fact that they are not remittance recipients.

The academic literature on migration, remittances and their effects on rural regions has been dominated by the debate between two groups with conflicting views perceptions on the topic. On the one hand, some authors (Reichert, 1981; Stuart, and Kearney, 1981) argue that rather than promoting development in Mexican sending regions, remittances may actually hamper it by producing to a series of negative effects such as dependency, engagement in conspicuous consumption, social differentiation between migrant and non-migrant households, inflation of land prices and

stagnation of productive activities. A second group of researchers (Durand, Parrado, and Massey, 1996; Massey *et al.*, 1987) present a more positive, promising view of remittances and their contribution to development. According to this group, remittances serve to improve agricultural production by allowing recipient households to buy inputs, grow cash crops with a market demand, expand irrigation, and overcome credit constraints. Within this line of thought, Durand, Parrado, and Massey (1996) state that migration detractors fail to consider the multiplier effects of remittances since these are spent on locally produced goods and services. In addition, remittances are spent on productive activities, provided appropriate conditions for investment are in place (Taylor, 1999).

Adams (1991) concludes that migrant households in rural Egypt show a greater tendency to invest than their non-migrant equivalents, the acquisition of agricultural and building land being the main choices for investment allocation. In the case of Pakistan, Adams (1998) reveals that international remittances play a significant role in the purchase of land, although they exhibit no effect on livestock accumulation. Instead, Lucas (1987) suggests that remittances earned by migrants working in South African mines are associated with livestock accumulation and long-term crop production improvement. Along these lines, Mochebelele, and Winter-Nelson (2000) emphasize that remittances allow migrant households in Lesotho to overcome financial constraints that would otherwise prevent them from carrying out timely, regular farm management activities. For Albania, McCarthy *et al.* (2006) report a rise in rural income linked to the change from staples to livestock production. These results are consistent with Miluka *et al.* (2007) who find that Albanian migrant households invest less in cropping inputs than their non-migrant counterparts and instead focus their investments on livestock production. A similar shifting pattern from staple to livestock production is recorded by Wouterse and Taylor (2008) in Burkina Faso. In the case of Ecuador, Jokisch (2002) states that international migration and remittances have allowed migrant households to accumulate more land than their non-migrant counterparts but he also reports no

link between international migration and the amount of fertilizer applied to crops. Gray (2009) finds that international remittances positively affect expenditure on agricultural inputs.

Apart from agriculture, Massey, and Parrado (1998) conclude that "migradollars", as they label remittances flowing from the United States into Mexico, play a significant role in business creation. Furthermore, neither migration nor remittances have any effect on the number of family and non-family workers in a business, leading the authors to conclude that migration itself cannot be blamed either for the small size or low job creation attributed to migrant businesses. Conversely, Canales, and Montiel (2004) argue that businesses funded by remittances are characterized by low investment, dependence on household labor and the inability to create paid jobs, whose multiplier effects under such conditions are limited.

Amuedo-Dorantes, and Pozo (2006) study the relationship between remittances and business ownership as a system of equations, arguing that both variables are due to a simultaneous process. On the one hand, they find that receiving remittances reduces the likelihood of owning businesses, and that instead, having a business increases the likelihood of receiving remittances. They explain such results by arguing that remittances increase the reservation wages of migrant households, which would encourage spending on other goods and services such as health and education. On the other hand, an already established business would encourage migrants to remit as they may perceive it either as a good investment opportunity or as a chance to be favored in future bequests. Conversely Meza, Pederzini, and Martínez (2006) find that owning a microenterprise reduces the likelihood of international migration.

Another group of researchers have studied the links between return migration and entrepreneurship, generally reporting a positive relationship. For instance, Arif, and Irfan (1997) conclude that savings accumulated by Pakistani migrants during their working time in Middle East countries allow them to switch from production and service employment to business and agricultural

activities once they return to Pakistan. Black, and Castaldo (2009) find that experience gained abroad as well as savings accumulated during the time of migration are positively correlated with the likelihood of Ghanaian and Ivorian returnees engaging in entrepreneurial activities. After controlling for the endogeneity of temporary migration with respect to the odds of having a business, Wahba, and Zenou (2009) are able to determine that savings and human capital accumulated by Egyptian temporary migrants while abroad increase their probabilities of becoming entrepreneurs despite the loss of local networks that international migration may entail.

Regarding Ecuador, the literature on migration and/or remittances and their effects on entrepreneurship is limited to anecdotal evidence or local cases of study. To illustrate, Camacho, and Hernández (2009) report that remittances inflow and the attendant construction boom have triggered the number of hardware stores and vehicles offering transport services in southern rural Ecuador. Likewise, Pribilsky (2007) report that most grocery stores in his research area were owned by returnees. This paper seeks to fill the gap in empirical research concerning migration, remittances and their impact on business ownership in rural Ecuador. It is apparently the first study that empirically estimates the link between migration, remittances and entrepreneurship in Ecuador.

Data and Variables

The data are mainly drawn from the Living Standards Measurement Survey 2005-2006 ("Encuesta de condiciones de vida (ECV). Quinta ronda 2005-2006") carried out by the National Institute of Statistics—Instituto Nacional de Estadística y Censos—(INEC, 2006). This cross-sectional data set has national representation and includes information on housing, household composition, health, education, household assets, entrepreneurship and agricultural activities as well as migration and remittances for a total of 13 581 rural and urban Ecuadorian households.

This study focuses on the impacts of migration and remittances on rural entrepreneurship. The analysis will therefore be restricted to a sample of 4 753 rural households.

Table 1 displays the variables used for the analysis as well as the descriptive statistics. The dependent variable of interest is a dummy taking the value of one if the household has a business. Migration and remittances are included as separate predictors, consistent with several other studies (Gray, 2009; Quinn, 2009) that also attempt to separate the effects of migration and remittances. However, McKenzie, and Sasin (2007) state that the effect of migration and remittances cannot be disentangled. Although migration and remittances are closely related, there are at least two reasons to analyze their effects separately. The first is linked to the structure of the survey itself. The questionnaire asks whether a household member has migrated during the five years preceding the survey, separately from the question about whether the household has received remittances during the twelve months preceding the survey. Consequently, it could be the case that a household receives remittances from members who had migrated before 2000. It is also possible that a household receives remittances from distant relatives or friends who were not household members before migrating. In any case, about 62 percent of households claiming to have received remittances do not report having any household member abroad, which suggests that the decision to treat migration and remittances as separate covariates is sensible.

Even if a household reports both having international migrants and receiving remittances, the impact of the implicit loss of labor attached to migration deserves special attention in the context of rural out-migration. For instance, migration and its inherent loss of labor could drive migrant households to leave labor-demanding cropping activities and switch to non-agricultural entrepreneurial activities. In order to account for this effect, the model includes a dichotomous variable, which gives a value of one to a household with one or more international migrants and zero otherwise. As for remittances, a number of studies (Lucas, 1987; Lucas, and

Table 1. Definitions and Descriptive Statistics of Variables

Variable	Description	Mean	Std. Dev.
Dependent variable			
Business	Business ownership (0/1)	0.299	0.458
Treatment variables			
Migrant household	At least one household member abroad (0/1)	0.064	0.245
Remittances	Monthly amount of remittances	17.684	94.934
Town remittances	Average remittances received by a household at town level	17.684	38.467
Control variables			
Age	Age of household head	50.885	16.061
Age squared	Squared age of household head	2 847.218	1 712.567
Sex	Female household head (0/1)	0.163	0.37
Indigenous	Indigenous household head (0/1)	0.212	0.409
Education	Years of education of household head	4.992	3.86
Education squared	Squared years of education of household head	39.827	58.133
Children	Number of household members under 16	1.768	1.792
Young men	Number of males ages 16-30	0.491	0.729
Young women	Number of females ages 16-30	0.506	0.687
Adult men	Number of males older than 30	0.855	0.559
Adult women	Number of females older than 30	0.875	0.572
Household education	Average household education	4.992	2.924
Owned land	Number of hectares of owned land	9.832	85.191
Owned land squared	Squared number of hectares of owned land	7 352.802	363 455.5
Owned home	Household owns home (0/1)	0.843	0.363
Electricity	Household has electricity (0/1)	0.869	0.337
Piped water	Household has piped water system (0/1)	0.331	0.47
Indoors water system	Household has indoors water system (0/1)	0.231	0.421
Credit	Household has received credit (0/1)	0.185	0.389
Distance to the closest road	Median of distance to the closest road at provincial level in 2000	0.432	0.721
Time to the closest market	Median of time to the closest market at provincial level in 2000	49.058	12.851

Note: Models also include provincial dummies.
Source: Author's own calculations with data from the "ECV 2005-2006" (INEC, 2006).

Stark, 1985) hold that remittances allow recipient households to overcome liquidity constraints that would otherwise prevent them from undertaking investments, adopting new technologies or as in this case engaging in entrepreneurial activities. This effect is expected to be captured by adding the monthly amount of remittances received by a household to the model. Additionally, specification includes the average amount of remittances received by a household at the town level. This variable is expected to account for the indirect or multiplier effects of remittances at town level.

The likelihood of migrant households owning a business increases if they are headed by educated men (Huesca, Calderón, and García, 2009). In order to account for the effects of this, a dummy taking the value of one if the household head is a woman as well as the number of completed years of formal education are included as predictors. A dummy variable taking the value of one if the household head considers himself/herself to be indigenous, is incorporated in order to account for the effect of ethnicity. The number of children, young men, young women, adult men and adult women (see table 1 for definitions) accounts for household composition. Martínez (2004) identifies land scarcity due to egalitarian inheritance as the main driving force for entrepreneurship in rural Ecuador. If such a statement is true, households owning more land should display a lower propensity to run a business. Having a home of one's own positively affects the likelihood of creating a business (Massey, and Parrado, 1998), and can be used as collateral for getting a loan. At the same time it offers a physical space for manufacturing and retail activities. A dummy variable accounting for home ownership is incorporated as a control variable.

Lack of credit and poor infrastructure are issues limiting investment in productive activities. To capture the effect of credit, this study includes a dummy variable which takes the value of one if the household has received a loan[3] and zero otherwise. The model

[3] This variable not only refers to credit explicitly conferred for business creation but to any kind of credit. The main idea behind the inclusion of this variable is to determine whether the household is eligible for credit concession or not.

also contains dummy variables indicating whether the household has electricity, piped water and an indoor water system to control for service infrastructure. To account for road infrastructure, the median of distance to the closest road and the median of the time needed to reach the closest market at provincial level are taken from the *Censo nacional agropecuario* (INEC, 2000).

Methodology

Empirical Strategy

In order to estimate the likelihood of a household owning a business, this study relies on a probit model of the following form:

$$Pr\ (B_i = 1|M_i,\ R_i,\ TR_i,\ x_i) = \varphi\ (M_i.\beta_1,\ R_i.\beta_2,\ TR_i.\beta_3,\ x_i.\beta_4)$$

where B_i is a dichotomous variable, which takes the value of one if the household owns a business and zero otherwise, x_i is a vector that includes the control variables described in the last section and φ is the standard cumulative normal distribution. The coefficients of migration (M_i), remittances (R_i) and remittances at town level (TR_i) are of particular interest for this study.

Addressing Potential Endogeneity in the Models

A growing number of papers studying the effects of migration and remittances have addressed the endogeneity of the latter with respect to educational attainment (Calero, Bedi, and Sparrow, 2009; López-Córdova, 2006), health outcomes (Antón, 2010; Hildebrandt, and McKenzie, 2005), entrepreneurship (Amuedo-Dorantes, and Pozo, 2006; Wahba, and Zenou, 2009), technology adoption (Mendola, 2008; Quinn, 2009) among other outcomes affected by decisions made at household level. Taylor, and Mora (2006) warn about the endogenous nature of migration and remittances and conclude that studies ignoring such threats run the risk of yielding biased estimators. Although most

contemporary studies rely on the use of instrumental variables, this is not the only way to deal with the potential endogeneity of migration found in the literature. In this respect, a group of authors (Gray, 2009; Wouterse, and Taylor, 2008) argue that the extent to which endogeneity can become a source of bias depends on the inherent characteristics of each case study.[4] The authors argue that by removing from the model variables that affect both migration and the outcome variables, including control variables that account for household characteristics (Gray, 2009), lagged household assets (Wouterse, and Taylor, 2008), and being careful when interpreting the results, the effects of endogeneity can be counteracted.

Regarding entrepreneurship, Amuedo-Dorantes, and Pozo (2006) argue that remittances may drive entrepreneurship by easing household liquidity constraints. However, businesses may attract remittances if migrants remit, expecting either to take advantage of good investment opportunities back home or to be favored in future inheritances. The authors address the potential endogeneity in their model by including both remittances and business ownership as outcome variables in a system of simultaneous equations. When estimating the effect of temporary migration on the likelihood of returnees becoming entrepreneurs, Wahba and Zenou (2009) justify the use of instrumental variables by arguing that those planning to become entrepreneurs may be more likely to migrate, which could bring endogeneity to the model due to reverse causality. Similarly, Kilic *et al.* (2009) rely on the use of instrumental variables when estimating the effect of migration experience on the probability of non-farm self-employment. The authors argue that the model may be affected by endogeneity because past migration decisions may be correlated with household characteristics that also affect the outcome variable.

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[4] When modeling for activity choice in Burkina Faso, Wouterse, and Taylor (2008) claim that the absence of land markets limits the scope to which migration could affect land accumulation, hence the probability of their models being endogenous. Likewise, Gray (2009) argues that the scarcity of land sales in southern rural Ecuador reduces the chances of reverse causality between migration and land ownership.

Since the use of instrumental variables entails a cost in terms of efficiency of the estimators, it is therefore advisable to use a test of exogeneity to determine whether or not instrumental variables are needed (Wooldridge, 2002). A number of tests (Hausman-Wu, Smith-Blundell, Wald) have been proposed to test for endogeneity. Nevertheless, such methodologies are based on the assumption that instruments are valid. For an instrument to be valid, it must fulfill two conditions: it must have explanatory power with respect to suspected endogenous variable (migration, remittances and town remittances in this case) and must not directly influence the outcome variable (exclusion restriction).

In order to test for the potential endogeneity of migration, this work relies on the number of children under grandparental care in a household and the average unemployment rate[5] at the town level in 2001. Leaving migrants' children under relatives (mainly grandparental) surveillance has been a distinctive feature of Ecuadorian out-migration (Pedone, 2006). As for unemployment, this is considered one of the main factors that triggered migration in the late 1990s (Ramírez, and Ramírez, 2005). The instruments for remittances are two dummies indicating whether or not the household has received remittances from Spain and whether or not the household has received clothes[6] as a gift during the twelve months preceding the survey. In their study on the impact of remittances on human capital investment in Ecuador, Calero, Bedi, and Sparrow (2009) report having successfully used the country of origin of remittances as an instrument for remittances while clothes are expected to be a common gift given by migrants to their relatives in Ecuador. The instruments for average remittances per household at the town level, taken from the *Censo de*

[5] It could be argued that the unemployment rate in 2001 might have influenced the decision to set up business in the future. However when this value is included as a covariate in the model estimating the likelihood of owning a business, it appears not to have any effect on the outcome variable ($z = 0.45$, p-value = 0.651).

[6] It could be argued that clothes given by a relative abroad could be used to start a clothes store in Ecuador; however this dummy variable does not explain the likelihood of business ownership ($z = 1.01$, p-value = 0.311).

población y vivienda (INEC, 2001), include the number of people with internal migration experience and the average number of women per household, both at the town level. In rural Andean sending regions, internal migration is seen as a first step before international migration (Carpio, 1992) while gender equilibrium is reported to have changed in these regions as a consequence of persistent male migration (Jokisch, 2001).

This study relies on the Smith-Blundell test (1986) to determine whether treatment variables are endogenous or not. This methodology focuses on testing endogeneity within the context of limited dependent variable models. In order to avoid the pernicious effects of weak instruments, explanatory power as well as the exclusion restriction of all the instruments proposed above will be tested before applying the Smith-Blundell test of exogeneity. Another drawback of exogeneity tests may be their sensitivity to specification. In other words, the test could reject the null hypothesis of endogeneity under one specification and fail to reject it, if a different specification is used. In order to deal with this threat, the exogeneity test will be run with three different specifications. The first includes household and household head characteristics, the second also considers land, home ownership, credit, services and road infrastructure while the third adds a set of provincial dummies to the model. If the null hypothesis of exogeneity is rejected with any of the three specifications, the use of instrumental variables will be justified.

Results

Endogeneity Tests

The explanatory power of the variables chosen to instrument migration, remittances and average amounts received by a household at the town level are shown in table 2. For the sake of brevity, the coefficients of the control variables are not displayed in the table. In all cases, the null hypotheses that the joint significance of instruments is zero can be rejected at 99 percent probability.

Table 2. Explanatory Power of Instruments for Migration, Household
Remittances and Average Remittances per Household at the Town Level

	Migration	*Household remittances*	*Average remittances per household at town level*
Instruments for migration			
Number of children under grandparental care	0.35*** (0.095)	–	–
Unemployment rate 2001	-5.519*** (1.978)	–	–
Instruments for household remittances			
Remittances from Spain (0/1)	–	81.404*** (9.371)	–
Gifts-clothes (0/1)	–	9.859*** (2.733)	–
Instruments for average remittances per household at town level			
Number of internal migrants 2001	–	–	0.0001*** (0.00002)
Average number of women 2001	–	–	14.551*** (2.886)
Joint significance of instruments	χ^2: 21.21***	*F*: 46.63***	*F*: 40.82***

Notes: Coefficients are shown with standard errors in parentheses.
*, **, ***Stand for significance at the 10, 5, and 1 percent levels, respectively. Specifications also include all the variables shown in table 1.
Source: Author's own calculations with data from the "ECV 2005-2006" (INEC, 2006).

In order to test whether the instruments meet the exclusion
restriction, they are included as covariates in the models estimat-
ing the likelihood of business ownership. The joint significance
of instruments for migration, remittances and average town re-
mittances together with *p*-values are shown in table 3. In all cas-
es, the null hypothesis that the true value of instruments is zero
cannot be rejected. Orthogonality of instruments for migration,
household remittances and average remittances at town level is
also supported by the Amemiya-Lee-Newey over identification
test, which yields *chi*-square values of 0.018 (p-value = 0.893),

1.557 (p-value = 0.212) and 0.663 (p-value = 0.415), respectively. Instruments therefore fulfill the exclusion restriction, that is, they have no influence on the output variables. From these results, it is possible to conclude that the instruments proposed are valid and can therefore be used to estimate the Smith-Blundell test of exogeneity (Smith, and Blundell, 1986).

Table 3. Joint Significance of Instruments for Migration, Household Remittances and Average Remittances per Household at Town Level, when Included as Predictors for Business Ownership

	Business ownership	
Instruments	*Joint significance*	*Prob χ² > 0*
For migration	0.46	0.794
For household remittances	1.91	0.384
For average remittances per household at town level	0.63	0.731

Source: Author's own calculations with data from the "ECV 2005-2006" (INEC, 2006).

The results of the Smith-Blundell test of exogeneity are shown in table 4. The null hypothesis of exogeneity cannot be rejected for any of the treatment variables. Given these somewhat unexpected results, it is not possible to reject the null hypothesis of exogeneity of migration and remittances with respect to business ownership, and will therefore treat them as exogenous covariates.

Why is the endogeneity of migration and/or remittances reported to be a serious threat in similar studies yet does not seem to be a problem of magnitude in this case? Two explanations are possible, both linked to the own characteristics of Ecuadorian out-migration. To begin with, it is necessary to differentiate between temporary migration from Egypt as studied by Wahba, and Zenou (2009) or migration from Albania to neighboring countries as studied by Kilic *et al.* (2009); and Ecuadorian international migration whether to the United States or to Spain. While temporary migrants know the approximate period of time they will stay abroad, and those who go to neighboring countries may have the possibility of travelling back and forth from their

Table 4. Smith-Blundell Test of Exogeneity for Migration, Remittances
and Average Remittances per Household at Town Level

| Specification | Business ownership | | | | | |
| | 1st | | 2nd | | 3rd | |
Suspected endogenous variables	χ^2	Prob.	χ^2	Prob.	χ^2	Prob.
Migration	0.009	0.922	0.864	0.352	0.543	0.461
Remittances	0.005	0.939	0.756	0.384	0.182	0.669
Average remittances per household at town level	0.552	0.457	0.072	0.788	0.023	0.879

Notes:
1st specification: household and household head characteristics.
2nd specification: household and household head characteristics, land and home ownership, credit, services, and road infrastructure.
3rd specification: household and household head characteristics, land and home ownership, credit, services, road infrastructure and provincial dummies.
Source: Author's own calculations with data from the "ecv 2005-2006" (inec, 2006).

country of origin, Ecuadorian out-migration was characterized by the lack of legal status of most migrants and uncertainty about the time of return.[7] Consequently, investing in entrepreneurial activities on their return may have not been the main incentive for migrants to migrate if the time of return was not clear from the outset. It is also worth noting that international migration in Ecuador was a response to a severe economic crisis characterized by a dramatic drop in incomes, a substantial increase in unemployment rates and a swift process of impoverishment among the population (Ramírez, and Ramírez, 2005). The Inter-American Development Bank (2003) stresses that the possibility of sending money relatives left behind in order to help them subsist during the harsh post-crisis times, was an integral and even a causal

[7] In order to travel to the United States, Ecuadorian undocumented migrants must embark on an extremely dangerous and expensive journey that will take them to Guatemala or Mexico by boat and then make their way to the United States (Jokisch, 2001; Jokisch, and Pribilsky, 2002). Although less costly and less restrictive in terms of migratory controls, migration to Spain was also characterized by high travel expenses and a lack of work visas for most migrants. The difficulty of reaching the destination country together with the lack of documents could make the date of return unclear for most migrants.

factor for Ecuadorians to migrate. Under such extreme conditions, it is not unreasonable to think that starting a business on their return, was neither a priority, nor the main motivation for migrants when they left Ecuador. Therefore, the effect of reverse causality between entrepreneurship and migration may be less important in this case.

Business Ownership

The results of the probit model estimating the probability of a household owning a business are displayed in table 5, next to robust standard errors and marginal effects. Neither migration nor remittances, whether at the household or town level, have significant effects on the probability of a household owning a business. One probable explanation for these results is that migrants tend to allocate their earnings to less risky investments such as purchasing land or building houses. Land is seen as a safe investment whose price tends to be higher than inflation rates (Adams, 1991; Jokisch, 2002). Consequently, migrants may prefer to purchase land rather than investing in entrepreneurial activities whose success is uncertain. Another possibility is that given the relative recentness of the massive Ecuadorian out-migration, a considerable share of remittances must still be spent on the repayment of loans secured in order to migrate and on covering households' basic needs; as a result, the amounts available for entrepreneurship are low. It is also possible that the post-crisis economic and political instability is still fresh in migrants' minds. Consequently they do not want to risk their savings on entrepreneurial adventures as argued by the Inter-American Development Bank (2003).

   Consistent with the findings of other studies (Amuedo-Dorantes, and Pozo, 2006; Massey, and Parrado, 1998), both the education of the household head and the average household educational attainment positively influence the likelihood of business ownership. Regarding household composition, the number of young women, adult men and adult women significantly in-

creases the probability of owning a business. Especially important is the role of adult women; for every woman over 30, the likelihood of owning a family business rises by 10 percent. Conversely, the likelihood decreases by two percent for every young man in the household. One possible explanation for this result is given by Martínez (2000), who argues that off-farm and salaried activities

Table 5. Determinants of Business Ownership in Rural Ecuador

	Probit	*Robust S.E.*	*Marginal effects*
Migrant household	0.0574	0.087	0.019
Remittances	-0.0003	0.0002	-0.0001
Town remittances	0.001	0.0006	0.0003
Age	0.012	0.008	0.004
Age squared	-0.0001**	0.00008	-0.00005
Sex	-0.104	0.072	-0.034
Indigenous	0.02	0.06	0.007
Education	0.033**	0.017	0.011
Education squared	-0.002**	0.0009	-0.0007
Children	0.017	0.013	0.005
Young men	-0.07**	0.029	-0.023
Young women	0.118***	0.031	0.04
Adult men	0.099**	0.05	0.033
Adult women	0.29***	0.042	0.098
Household education	0.066***	0.012	0.022
Owned land	-0.003***	0.001	-0.001
Owned land squared	0***	0	0
Owned home	0.111*	0.058	0.036
Electricity	0.237***	0.077	0.075
Piped water	0.215***	0.05	0.074
Indoors water system	0.325***	0.055	0.114
Credit	0.187***	0.051	0.065
Distance to the closest road	-0.087	0.096	-0.029
Time to the closest market	0.005	0.004	0.001
Number of observations	4 753		
χ^2	555.18		
Pseudo R^2	0.11		

*, **, ***Stand for significance at the 10, 5, and 1 percent levels, respectively. Specification also includes provincial dummies.
Source: Author's own calculations with data from the "ECV 2005-2006" (INEC, 2006).

are mainly carried out by men while retailing and manufacturing activities are considered female work. Agricultural land area has a slightly negative impact on the probability of owning a business, consistent with Martínez (2004) who reports that in the rural Ecuadorian context, entrepreneurship is a response to land fragmentation due to continuous egalitarian inheritance. This process has resulted in a considerable reduction in the size of plots to the point where farmers can no longer earn a livelihood from cropping. Instead, home ownership increases the likelihood of having a business by almost four percent. As expected, credit availability is another factor positively correlated with business ownership. Credit access increases the odds of owning a home enterprise by almost seven percentage points.

Regarding services and road infrastructure, the availability of electricity, piped water and indoor piped water increases the probability of business ownership by 7, 7 and 11 percent respectively. These results are consistent with those reported by Lanjouw (1999) who found that services and access infrastructure are key determinants of the likelihood of owning a rural enterprise in Ecuador. In this study, however, road infrastructure, proxied by the median of the distance to the closest road and the median of the time needed to reach the closest market, has no effect on the probability of owning a business.

Conclusions

The findings of this paper suggest that neither migration nor remittances, whether at the household or town level, have any effect on the likelihood of a household owning a business in rural Ecuador and instead that education, credit and infrastructure are, as expected, key determinants for rural entrepreneurship. In addition to these findings, this paper also offers some policy recommendations.

The rapid increase experienced by the volume of remittances in the past decade in total and relative numbers has driven a considerable number of researchers from various disciplines, policy

makers, development practitioners and international cooperation agencies to consider remittances as an effective weapon to combat underdevelopment, as a result of which they have started a number of projects that have migration as the spearhead of their development strategies. Despite the good intentions of such initiatives, there is the risk of paying too much attention to remittances and their potential for promoting development, while neglecting other factors that are at least as important as remittances in prompting local and regional development. There is evidence that remittances have allowed Ecuadorian migrants' households to increase consumption levels and to improve the health status and educational attainment of their children. However, remittances alone cannot offset the effects of decades of lack of investment in education, credit, and infrastructure in rural regions. As stated by Taylor *et al.* (1996) cooperatives, banks, and workers' associations specially conceived to fulfill migrants' requirements as well as to direct remittances into productive activities would probably fail if the conditions that prevent migrants from investing do not change beforehand. Under these circumstances, should governmental and non-governmental organizations not concentrate on providing rural communities with infrastructure, credit, and schools before launching co-development projects or establishing banks or cooperatives specially designed for migrants?

In this respect, the rural population's participation in entrepreneurship, and in general in non-farm activities, is limited by a number of "entry barriers", including lack of education and training, lack of information on market opportunities, lack of credit for business start-ups and poor infrastructure. Indeed, there is evidence from Ecuador (Elbers, and Lanjouw, 2001; Lanjouw, 1999) that households with well educated members and access to services (electricity and telephone) are more likely to be engaged in entrepreneurial activities. If policies are designed to promote rural entrepreneurship, policy makers should first provide rural areas with education, credit and infrastructure in order to overcome entry barriers that prevent not only migrants but the whole rural population from investing in rural businesses.

This study has analyzed the effects of migration and remittances on business ownership in rural Ecuador on the basis of the fact that migrants are still abroad. A logical extension of this work would be to examine the likelihood of business ownership among returnees, the number of which is expected to grow due to the effects of the world's financial crisis on the economies of the United States and Spain, the two main destination countries for Ecuadorian migrants.

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