Contrasting Migration Effects with Remittance Effects on Child Growth Outcomes in Nicaragua

Abstract

Counter to expectations, Nicaragua's civil conflict and subsequent Sandinista revolution in the 1960s-1980s corresponded with vast declines in child malnutrition. However, child malnutrition worsened in the 1990s. This investigation quantifies associations among Nicaraguan fathers' and mothers' domestic and international migration, remittances and left-behind child growth shortly after this time period. Based on 2001 national-level data, preliminary findings include decreased stunting and underweight conditions in children residing in households receiving higher remittance amounts. In contrast, no significant associations were found between child stunting or being underweight and parental absences due to domestic or international migration. While the vast majority of Central American international migrants travel northward to the US, most Nicaraguans migrate southward to Costa Rica. The ease and speed with which Nicaraguan migrants can integrate themselves into Costa Rica's economy and begin to send money may largely explain the non-harmful impact of parental absences in left-behind children's growth outcomes there.

Introduction

In response to deficiencies in economic, political and/or social standing, many parents from the developing world use migration as a means to improve the future prospects of their children (Davis and Lopez-Carr 2010; Massey et al. 1993). The monetary remittances that are generated through economic migration are a major mechanism for alleviating chronic poverty in these settings (Adams 2006). However, the benefits derived from remittances are often diminished by negative impacts attributable to parental absences. Migration by its very nature places heavy burdens on left-behind family members, particularly young children, that can cause permanent harm related to undernutrition rather than the improved future that their parents envisioned. Undernutrition suffered *in utero* and during infancy can lead to diminished cognitive ability (Martorell and Zongrone 2012; Victora et al. 2008) and physical stature (Dewey and Begum 2011; Huang, Soldo and Elo 2011), reduced economic productivity (Carba, Tan and Adair 2009; Milman et al. 2005; Strauss and Thomas 1998), and higher risk of non-communicable disease in adulthood (Victora et al. 2008). This project strives to disentangle these competing forces—parental absences and remittances—in the debate over whether economic migration ultimately helps or harms left-behind children's nutrition outcomes in developing world settings.

Much research has investigated the effects of immigration on destination communities, but there is much we still do not know about what happens to vulnerable people and communities left behind (Clemens 2011). Economic migration and the remittances that are generated can be an integral part of a household's livelihood strategy in the developing world (Adams Jr 2004; Adams Jr and Page 2005; Adams 2006). Prior to the 1970s, relatively little remittance income flowed among nations. Today, the World Bank estimates that $406 billion in remittance transfers, similar to the GDP of Austria, were made to developing countries alone in 2011 (World Bank 2010). Remittances also represent substantial contributions to overall GDPs for many developing economies. For example, in 2009, remittances constituted more than 10% of the GDPs of 22 poorer nations, including Nicaragua (World Bank 2010).

A majority of the existent research on these dynamics measures migration duration, lumping together parental absences with remittance transfers (Carletto, Covarrubias and

Maluccio 2011; Hildebrandt et al. 2005; Kanaiaupuni and Donato 1999; Nobles 2007; Schmeer 2009). A smaller body of work looks only at remittance impacts on children's nutrition outcomes without addressing parental absences (Acosta, Fajnzylber and Lopez 2007; Antón 2010). Not all economic migration events are similar; some households receive remittances from non-parent household members or individuals outside the household, and some migrant parents are slow to or never successfully send remittances. Given the nuanced nature of economic migration and its influence on left-behind children's nutrition outcomes, it is critical that the range of migration and remittance-sending scenarios be addressed.

Research Question

How do the domestic and international migration of fathers and/or mothers versus the resultant remittances influence child growth outcomes in migrant-sending households? It is hypothesized that parental absences negatively impact measures of undernutrition while increases in remittances have a countervailing beneficial effect.

Data

To determine how parental absences due to domestic and international migration and concomitant remittances influence children's nutritional outcomes, I used 2001 nationally representative data from Nicaragua's Encuesta Nacional de Hogares Sobre Medicion de Nivel de Vida (EMNV). Nicaragua's EMNV provides a rich source of individual, household and municipal-level data. The data were collected using a stratified probabilistic sampling design to capture a proportional number of households from each of Nicaragua's 17 departments (World Bank 2005).

Preliminary Statistical Analyses

Preliminary statistical analyses of stunting were performed with children aged <3 to address the fact that stunting is unlikely to occur after a child has reached the age of 3 (Beaton et al. 1990; Martorell et al. 1995). Additionally, measures of underweight were analyzed with children aged <5, conforming to the WHO's international growth standards (de Onis et al. 2007; WHO 2006). Three-level random intercept logistic odds models were used for these preliminary analyses with 'child' at the first level, 'household' at the second level and 'community at the third level.

Preliminary Results

This investigation tests whether there are associations among father's or mother's absence due to domestic or international migration in addition to the receipt of remittances over the last year with changes in left-behind children's growth outcomes. It was found that the odds of child suffering from a stunted or underweight condition was significantly lower in households that received increasing levels of remittances (Table 1). However, no significant correlations were found among the odds of children being stunted or underweight and their father or mother being absent due to domestic or international migration. The absence of a father due to divorce or separation, an interesting reference category to the parental migration absence scenarios, was found to be significantly correlated with a higher odds of a child being both stunted and underweight.

Next Steps

The non-significant effect of parental absences due to international migration is likely attributable to US migrants being lumped with Costa Rican migrants. A next step in the

investigation will be to separate south-north migrants from south-south migrants to determine if parental absences under these very different migration scenarios have significantly different effects on left-behind children's development outcomes. This step is important because, even though US migration is approximately three times more profitable than Costa Rican migration (Razavi 2011), the barriers to US migration for undocumented migrants are quite cumbersome compared to Costa Rica migration. Furthermore, the window for translating success into non-negative child growth is short (first three years of life for stunting), making south-south migration to Costa Rica, perhaps, a better livelihood strategy compared with south-north migration to the US.

An additional next step will be to improve the multilevel models used here that control for spatial correlation of migration and remittances at the household and community level. The present models lack controls for the endogeneity of decisions to migrate or to send remittances and children's health prior to a migration or remittance-sending event. To handle these modeling challenges, three-equation simultaneous equation models will be used that address: (1) endogeneity of decisions to migrate and children's growth outcomes in the first equation and (2) endogeneity of decisions to remit income and children's growth outcomes in the second equation. A third equation captures the simultaneous influences of parental absences and remittances effects on child growth. The most promising migration instrumental variables (IVs) to be explored include historic weather shocks (e.g., prolonged droughts or excessive rains) (Munshi 2003; Nawrotzki, Riosmena and Hunter 2013) and infrastructure differences (e.g., historic railroads) (Adams and Cuecuecha 2010; Hildebrandt et al. 2005). In contrast, remittance IVs will be considered that exploit variation in low-skilled labor characteristics in US and Costa Rican migration destinations.

TABLE 1. Three-Level Random Intercept, Logistic, Odds of Experiencing Malnutrition for Nicaraguan Children, EMNV 2001.

	Children Aged<3 Stunting		Children Aged<5 Underweight	
Odds Ratios = exp(β)	OR	(SE)	OR	(SE)
FIXED EFFECTS				
Independent variables				
Total household remittances (in Ln U.S. dollars)	0.93*	(0.03)	0.88*	0.06
Father in household (reference)	1^R		1^R	
Father separated from household	1.61*	(0.35)	2.66**	0.94
Father away domestic migration	0.98	(0.29)	2.10	0.96
Father away international migration	1.01	(0.62)	[a]	
Father deceased or non-existent	1.57	(0.996)	2.66	2.59
Mother in household (reference)				
Mother separated from household	0.50	(0.29)	1.84	1.37
Mother away domestic migration	1.14	(0.64)	0.83	0.78
Mother away international migration	1.40	(1.95)	[b]	
Mother deceased or non-existent	[c]		[c]	
Individual controls				
Age (days)	1.002***	(0.0003)	0.999	0.0004
Female	0.70*	(0.11)	1.03	0.26
Ethnicity				
Mestizo (reference)	1^R		1^R	
Afro-Nicaraguan	0.60^+	(0.18)	0.97	0.46
Indigenous	1.22	(0.51)	1.66	1.19
Household controls				
Household size	1.04	(0.03)	1.07	0.04
Household wealth index	0.65***	(0.05)	0.53***	0.09
Rural	0.91	(0.18)	1.61	0.58
Geographic controls				
Managua (reference)	1^R		1^R	
Pacific	1.69	(0.77)	1.81	1.65
Central	2.60*	(1.18)	2.15	1.98
Atlantic	2.20	(1.06)	0.74	0.73
RANDOM EFFECTS				
$\Psi^{(2)}$	0.69	(0.52)	1.44	(1.20)
$\Psi^{(3)}$	0.21	(0.12)	0.33	(0.33)
Log likelihood	-691.69		-317.90	
Number of Children (Level 1)	1586		1554	
Number of Households (Level 2)	1339		1316	
Number of Communities (Level 3)	124		124	

$^+$significant at p<0.10, *significant at p<0.05, **significant at p<0.01, ***significant at p<0.001

[a,b] The occurrence of an underweight children with a father or mother living abroad does not occur. Therefore, due to perfect collinearity, the 53 and 21 cases, respectively, of children with a father or a mother living abroad have been dropped from the analysis.

[c] The occurrence of a stunted or underweight children with a deceased or non-existent mothers does not occur. Therefore, due to perfect collinearity, the 6 and 12 cases, respectively, of a child with a deceased or non-existent mother have been dropped from the analysis.

1^R designates the reference group that results for categorical and ordinal independent variables that are compared against. The reference has a value of 1.

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