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Keywords: Colombia, crime, migration, remittances

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INTRODUCTION

People move across regions of a country or from one country to another to improve their working conditions, find better opportunities, or to escape violence, among other reasons. In the past, migration often meant the migrant was cut off from, or had limited communication with, family and friends left behind. However, technological advances in telecommunications have greatly increased migrants' ability to communicate with family members and friends in their home community. These advances in technology have also simplified domestic and international money transfers, thus allowing migrants to send money back home to support family and friends. By simply paying a small fee to a money transfer agency (e.g., Western Union), migrants can make funds available in their home community within minutes. A recent study by the International Fund for Agricultural Development and the Inter-American Development Bank estimates that in 2006 alone migrant workers sent home more than $300 billion U.S. dollars [International Fund for Agricultural Development, 2007].

Previous studies have used an extensive list of variables related to the migrant, the household, and the home country to explain the motivations of migrants to remit money home. However, there is still no consensus about migrants' motivations to remit. In one of the first studies on the subject, Lucas and Stark (1985), using information on a drought that occurred in Botswana, tested the insurance motivation to remit. The insurance motivation suggests that by leaving the household and moving to another region or country, the migrant will be subjected to risks that are uncorrelated to those that the household faces; hence, the migrant and the household are able to diversify their risks [see also Amuedo-Dorantes and Pozo 2006b; Choi and Yang 2007]. In their study, Lucas and Stark, posited that if a coinsurance agreement was in place between the migrant and the household, households with a higher risk of losing crops or cattle,

given the seriousness of the drought, would receive more remittances (i.e., to gain access to supplies of water). Although their results support the insurance motivation for remitting, they noted that, given the lack of enforceability of the insurance arrangement, the migrants' behavior may still imply that they acted in an altruistic manner.[1]

Agarwal and Horowitz [2002], in a study of Guyana, used the impact of the number of migrants in each household on remittances as an indicator of altruism versus insurance. They argued that if the number of migrants from a single family increases and remittances sent by each migrant do not decrease, then individual migrants must be insuring themselves with the household. In other words, each migrant needs to "pay in" regardless of the total number of migrants. However, if the number of migrants increases and the number of remittances sent by each migrant decreases, then remittances are likely made for altruistic reasons; that is, as more migrants begin to remit, the household's demand for support from individual migrants decreases. Agarwal and Horowitz's results suggest that altruism is the main motivation for remittance transfers.

Cox, Eser, and Jimenez [1998] used data from the Peruvian Living Standards Survey to test the altruistic motivation of transfers among households against an exchange motivation (i.e., households transfer money because they expect reciprocation). Unlike the altruistic motivation, which implies a negative relation between transfers and the recipient's pre-transfer income, under the exchange motivation, there may be a positive relation between the transfer amount and the recipient pre-transfer income. Using variables such as social security payments, Cox et al. found evidence favoring the exchange motivation to remit.

With this article, we add to this growing body of literature by using the 2003 Quality of Life Survey of Colombia to examine the main motivations behind the decision to remit and the

[1] Lucas and Stark [1985] also provided insights about the loan repayment motivation for remitting.

amount remitted, placing special attention on the impact of crime on transfers. We posit that in areas where violent crimes are commonplace, variables related to criminality and violence can be used to study the motivations to remit. Crime can have a profound impact on household income and assets, thereby encouraging altruistic transfers; however, crime can also discourage the flow of self-interested transfers by negatively affecting returns. By examining the response of transfers after a household member has been a victim of a crime, we provide insights on why migrants transfer money and, thereby, increase our understanding of the motives that drive remittances and migration. To the best of our knowledge, our paper is the first study to focus on crime as a means to study the motivation for transfers.

Colombia is a country with a legacy of violence that continues today. Violence has forced approximately 4% of the population to leave their homes and become refugees [Arboleda and Correa 2002]. In 2004 alone, over 250,000 Colombians were forced to become refugees [UNICEF 2006]. Most of the refugees come from rural areas, but the violence, in conjunction with an economic downturn at the end of the 1990s, also induced a large exodus of highly educated citizens.[2] In total, between 2000 and 2005, about 1 million Colombians migrated to the United States, Spain, and Costa Rica [Inter-American Development Bank 2006].

A consequence of this surge in internal and overseas migration has been a significant increase in the flow of domestic and international remittance transfers into the country as Colombian migrants send money to family and friends left behind in their home communities. In 2002, remittances to Colombia amounted to 2,092 million US dollars (US$) but rose more than

[2] For example, Saravia and Miranda [2004] reported that Colombians who are working in research and development abroad are the equivalent of one-half the scientists involved in research and development in Colombia. A recent study done by Adams [2003] for the World Bank shows that of South American countries, Colombia has the highest number of immigrants (age 25 and older) to the United States with a tertiary education (12 years or more).

twofold to US$4,200 million by 2006.[3] A recent survey on licensed money transmitters conducted by the New York State Banking Department found that in one New York City neighborhood alone (Jackson Heights in Queens), Colombians sent back home over US$20 million between June 2004 and June 2005 [Nikolov 2006].

International remittances in Colombia are also substantial when compared with other Latin American countries. In 2006, Colombia ranked third among Latin American countries in total remittances received, just behind Brazil and Mexico. Moreover, remittances to Colombia accounted for 3.3% of the country's gross domestic product—a higher share than both Brazil (0.3%) and Mexico (2.9%) [International Fund for Agricultural Development, 2007]. In addition, the declining in the cost of transferring money and the increasing stock of Colombians abroad promises a continuing flow of remittances to Colombia in the years ahead.[4]

In addition to studying the impact of crime on money transfers, this article also contributes to the overall discussion of remittances in Colombia, a topic that remains relatively unexplored in the literature. The Colombian experience represents a unique and interesting case for studying the relation between remittances and crime for several reasons: (a) Colombia has a large number of internal and overseas migrants, (b) it receives a substantial flow of remittances (ranking third in Latin America), (c) it is one of the most violent countries in Latin America, and (d) it has a large drug trafficking industry. Because one of the main priorities of the U.S. government in regulating remittances is to disrupt illegitimate transfers and facilitate legitimate transfers, information on the determinants of remittance transfers can assist government

[3] The estimates of remittances from the Inter-American Development Bank are based mainly on recorded remittance flows. There is the argument that an important portion of remittance flows are sent through unofficial channels and, thus, official figures underestimate the total flow of remittances. However, Colombia's Central Bank has been recognized as one of the best agencies in accounting and reporting remittances [Inter-American Development Bank 2006].

[4] In fact, the Inter-American Development Bank has recognized that "the money transfer market in Colombia is becoming more competitive, with new small businesses entering the sector" [Inter-American Development Bank 2006, p. 23].

authorities to ensure that remittance channels are not abused by criminals and yet remain open between hard-working migrants and their families in Colombia.[5]

THEORETICAL BACKGROUND

A Simple Model

In this section, we present a conceptual framework for analyzing migrants' remittances. The most commonly accepted motivation for remittance transfers is altruism; that is, migrants care about the household's well-being and remit to improve the household's living conditions. If altruism is a motivation to remit, variables such as household consumption should enter the migrant's utility function. A decline in variables affecting household consumption, such as household income, should encourage more transfers. Being the victim of a crime may have an adverse impact on household income or create additional financial needs on the part of the household, thus encouraging increased altruistic transfers.

Although intuitively appealing, altruism alone has failed to explain the totality of remittance transfers. Another alternative explanation for remitting behavior is "self-interest" motives. One of the self-interest motives to remit that is frequently mentioned in the literature is inheritance. In this case, migrants remit because they hope to benefit from the household's gratitude, which may materialize as a portion of the household's inheritance [de la Briere, Sadouleth, de Janvry, and Lambert 2002].[6] As such, if self-interest is the main motivation for remitting, then changes in the expected return of remittances should impact the level of transfers.

[5] For instance, John B. Taylor, Under Secretary of Treasury of International Affairs under President George W. Bush administration, recently expressed in this regard that "to make sure remittance channels are not abused by criminals or terrorists, we [the U.S. Government] are working with the IMF, World Bank and FATF to enhance country compliance with anti-money laundering and counter terrorist financing standards. It is in all of our interests to make formal channels more efficient and attractive for users so that legitimate flows need not flow outside of these formal institutions" [Taylor 2004].

[6] See Alonso-Carrera, Caballe, and Raurich [2007], Bernheim, Shleifer, and Summers [1985] and Constantinides et al. [2007] for further discussion on the economics of bequests.

Because crimes can potentially affect household assets, criminality may have important effects on the return to remittances.

In the model below, migrants remit for household consumption and self-interest purposes in the first or current period, where *a* denotes remittances intended to be consumed by the household and *s* denotes remittances sent for self-interest motives. The migrant uses his or her income in the current period (*y*) to consume in the host community and to send remittances. Thus, the budget constraint is given by

$$y = c + a + s. \tag{1}$$

The migrant's utility is assumed to be additively separable and depends on his or her consumption during the current and future periods (c and c^F, respectively) and the consumption of the household in the home community (c^*). Household consumption depends positively on household income (y^*) and a, that is, $c^*(a, y^*)$. The migrant's consumption in the future depends on the remittances he or she sends for self-interest motives (*s*). Hence, future consumption is given by $c^F(s)$, where $c_1^F \geq 0$.[7] As previously mentioned, examples of this return can be the return to an investment in the home community or a portion of the household's inheritance.

The migrant's problem is to choose *c*, *a*, and *s* to maximize his or her utility, subject to the constraint implied by equation (1). Letting β represent the discount factor, our maximization problem can be written as:

$$\underset{\{c,r,a\}}{Max}\ \delta U^H(c^*(a, y^*)) + \alpha U^M(c) + \gamma\beta V(c^F(s)), \quad \delta, \alpha, \gamma \geq 0, \tag{2}$$

subject to $y = c + a + s$.

[7] U_1^h is the first derivative with respect to the ith argument in U^h. U_{ii}^h refers to the second derivative—the derivative of U_i^h with respect to the ith argument in U^h. We assume that first derivatives are nonnegative and second derivatives are nonpositive.

The importance of household consumption in the migrant's utility function is represented by δ, whereas α and γ represent the weights on the migrant's current and future consumption, respectively.[8] The migrant's first-order conditions imply:

$$\alpha U_1^m = \delta U_1^H c_1^*, \tag{3}$$

$$\alpha U_1^m = \gamma \beta V_1 c_1^F. \tag{4}$$

We obtain several results from our model (see Appendix A for the explicit partial derivatives). Remittances intended for family consumption decrease after increases in household income, $\partial a / \partial y^* \leq 0$. In this case, given that the household need of support declines, the migrant can transfer money away from household consumption toward current and future consumption. On the other hand, an increase in household income has a positive effect on self-interest transfers, $\partial s / \partial y^* \geq 0$. Also, increases in the migrant's income raise remittances, $\partial a / \partial y \geq 0$ and $\partial s / \partial y \geq 0$. If household consumption and future consumption are normal goods, this result is as we expect.

Some testable Implications

Table 1 provides a summary of the main predictions of our model. In terms of the empirical analysis, as the previous discussion suggests, the impact of crimes on transfers can shed light on the relative importance of altruism and self-interest motivations to remit. The model posits that altruistic transfers should increase after a decrease in household income. Because crime has the potential to decrease household income, we expect that migrants with altruistic motivations for transferring money will increase remittances after the household has been negatively affected by

[8] U^H is the utility obtained from household consumption, U^M is the utility obtained from current consumption in the host community, and V is the utility obtained from future consumption.

crime. Conversely, we expect migrants with self-interest motives for remitting to decrease transfers after criminal events because crimes have the potential to decrease the return on remittances. For instance, if crimes have a negative impact on household assets, then migrants interested in inheriting from the households may decrease transfers.

<<TABLE 1 ABOUT HERE>>

In our model, we limit the reasons to remit to two: altruism and self-interest.[9] Although these motives are two of the most important reasons to remit, other reasons to remit may exist. Nonetheless, we prefer to limit our study to altruism and self-interest and leave other motives for future research.

HISTORICAL CONTEXT AND DATA

Historical Context

Colombia has a long history of violence. The assassination of popular leader Jorge Eliécer Gaitán in 1948 started a civil conflict, known as *La Violencia* (The Violence), in which more than 200,000 people were killed. After *La Violencia*, annual homicide rates stabilized at 20 homicides per 100,000 residents until the 1970s when rates increased dramatically, reaching 80 homicides per 100,000 residents by 1991. The homicide rate in Colombia remains one of the highest in Latin America—three times that of Mexico and Brazil [Levitt and Rubio 2000].

The recent history of violence in Colombia is strongly related to the drug traffic and to the civil conflict among guerillas, paramilitaries, and the Colombian army. The growth of an

[9] Examples of papers including just a few motives for remitting in their models include Agarwal and Horowitz [2002], Amuedo-Dorantes and Pozo [2006b], Cox et al. [1998] and de la Briere et al. [2002], among others.

impoverished urban population has also resulted in widespread violence in Colombia's cities. In fact, Colombia's second largest city, Medellin, is considered one the most dangerous cities in the Americas, earning the infamous title of "City of Eternal Violence."[10] Although violence in Medellin as well as other cities has decreased somewhat in recent years, criminality rates remain high compared with other Latin American cities.

Moreover, the ongoing conflict among guerillas, paramilitaries, and the army in rural areas provides a continuous flow of people displaced by violence into Colombia's already crowded cities. Given the lack of employment opportunities and the need for money to survive, these newly displaced persons may be motivated to become involved in criminal activity as a means to provide for their families.

A Preliminary Look at the Data

To study the determinants of remittance transfers and the impact of crime on the decision to remit and the amount remitted, we use data from the 2003 Quality of Life Survey of Colombia, which is a nationally representative survey that includes detailed information about 22,948 household heads residing throughout Colombia. The survey was conducted from June 2003 to July 2003 in the capital city of Bogotá and from March 2003 to May 2003 in nine other regions (Atlántica, Antioquia, Central, Oriental, Orinoquia-Amazonia, Pacífica, San Andrés and Providencia, and Valle).[11]

[10] "City of Eternal Violence" is a reference to Medellin's traditional title as the "City of the Eternal Spring." See Grisword [2005] for the complete story.

[11] Atlántica includes Guajira, Cesar, Magdalena, Atlántico, Bolivar, Sucre, and Córdoba. Pacífica includes Chocó, Cauca, and Nariño. Central includes Caldas, Quindío, Risaralda, Tolima, Huila, and Caquetá. Oriental includes Norte de Santander, Santander, Boyacá, Cundinamarca, and Meta. Orinoquia-Amazonia includes Arauca, Casanare, Vichada, Guainía, Guaviare, Vaupéz, Amazonas, and Putumayo.

Table 2 reports the data on transfers for the households in our sample.[12] The first column reports the total transfer amount received by the household from other households during the previous 12 months. This variable, originally given in Colombian pesos, is converted to U.S. dollars to allow for better comparison with other studies. The households received two types of transfers from other households, domestic transfers and international transfers, which are not mutually exclusive (i.e., a household could report receiving both types of transfers). The average domestic (international) transfer received by the households was about US$487 (US$827). As shown in the second column about 19% (3.3%) of the households reported receiving domestic (international) transfers during the previous 12 months. Hence, although more households received domestic remittances, recipients of international transfers received more funds on average.[13]

<<TABLE 2 ABOUT HERE>>

Columns 3 and 4 of Table 2, which provide preliminary evidence regarding the relation between crime and remittances, show that when we limit our sample to those households that were victims of crimes, a slightly higher percentage of the households reported receiving transfers in comparison with the total sample. We also see that remittance-recipient households that were victims of crimes received more funds than their nonvictim counterparts. Hence, our preliminary findings suggest that being the victim of a crime can potentially lead to more transfers. However, to test this hypothesis properly, we must first control for other household characteristics to determine whether crime's positive relation to transfers continues to persist.

[12] The question we use to obtain transfers reads: "Did you received any money from someone outside the household (parents, sons/daughters, other family members, friends)? Did this money come from outside or inside the country?"
[13] The amount reflects the total transfer received by all household members.

Table 3 provides additional descriptive statistics of the population in the survey. Not surprisingly, given that our sample is limited to household heads, only 32% of the sample are women.[14] About 64% of the household heads are married, and the average age is 47 years. Households are comprised of an average of four people. We use the average education of the adult household members as a measure of household education. From the original scale of 1 to 9, the average measure of household education is 3.7 (3 = primary school; 4 = is secondary school).[15] Also, approximately 8% of the households reported that during the previous year at least one member of the household suffered from a serious illness, which should encourage altruistic transfers.

<<TABLE 3 ABOUT HERE>>

We also include variables that control for home ownership, employment, and income. Owner is a dummy variable that equals 1 if a household member owns the house, and zero otherwise. Being a homeowner should have a positive impact on self-interest transfers as a home is an inheritable asset. Almost 53% of the households heads are homeowners. The variable employed, equals 1 if the household head is currently employed, and zero otherwise. The variable, wage, reports the total monthly earnings of all the household members (including in-kind payments). Being employed and having higher earnings are expected to have a negative impact on altruistic transfers. The average total monthly earnings of the household members is US$180. Hence, on average, the households in our sample annual earnings are approximately US$2,160. This finding accentuates the importance of transfers for receiving families: The

[14] The household head was identified by the household members at the time of the survey.
[15] The education variable include in the estimation is not a categorical variable. This variable was originally coded as a categorical variable, but in the estimation we include the average education of the adult household members.

average domestic (international) transfer of US$487 (US$827) is equivalent to 22% (38%) of the total average earnings from work of the sample households.

Table 4 reports transfers conditional on household earnings. The first column reports the average transfer received by households with total household earnings below the mean of household earnings. The second column reports the total amount of remittances received by households with total household earnings above the mean of household earnings. It seems that households with above-average earnings received a slightly higher amount of money. For this group, domestic (international) transfers are approximately US$543 (US$878) US dollars, whereas for those households with earnings below average, transfers are approximately US$481 (US$822).

<<INSERT TABLE 4 ABOUT HERE>>

Given the profound economic crisis that Colombia experienced during the late 1990s, we are able to create a long-term shock to household income.[16] The variable, income shock, represents a long-term shock to household income that should be closely related with altruistic transfers. Furthermore, given its potential detrimental impact on household assets, we also expect long-term income shock to have a negative impact on self-interest transfers.

Finally, the variable, victim, is a dummy indicating whether a household member was the victim of at least one of the following crimes during previous 12 months: robbery, assault, extortion, kidnapping, forced eviction, or homicide. In total, about 14% of the households reported being victim of at least one of these events.

[16] Please refer to Appendix B for a list of the events that constitute a serious economic problem.

ECONOMETRIC ANALYSIS

To understand better what drives remitting behavior and to explain the potential impact of crimes on remittance transfers, we estimate individual remitting equations for both international and domestic transfers. In the following analysis, we first estimate the likelihood that households within our sample will receive transfers using a series of probit models. These models provide us with information on both the households that did and did not received transfers. Next, we explore what accounts for differences in the sums received using a Tobit model.

Who Receives Remittances?

We include as predictors a series of socio-demographic and economic variables of the household including age, sex, employment status and marital status of the household head, household monthly earnings, average education level of the adult household members, homeownership status, and size of the household. We also include regional dummy variables to control for possible regional effects.

There is, however, a potential econometric issue with our estimation. There may be reverse causality with transfers influencing the probability of being the victim of a crime. That is, receiving money from abroad can make the household more susceptible to some types of crimes, such as extortions, robberies, and kidnappings. Moreover, unobserved characteristics of households may affect both the probability of being victim of a crime and the probability of receiving transfers. To account for this potential endogenity problem, we estimate an instrumental variable probit (IV-Probit) of whether the household receives transfers, following a method similar to the one suggested by Newey [1987].[17]

[17] We use Newey (1987) minimum x^2 estimator. In the tables, we report results from the second step. Results from the first step are available from the authors on request.

Previous studies related to migration have used a series of diverse instruments. For example, Hanson and Woodruff [2003], in a study of migration and schooling in Mexico, instrumented household members migration using the interaction between historical state migration patterns and household characteristics. Borraz [2005], in another study for Mexico, used the interaction of the geographic distance of the household to the United States with mother and household characteristics as an instrument for remittances. Amuedo-Dorantes and Pozo [2006a] used the interaction between several household characteristics and the per capita count of Western Unions in the state as an instrument for remittances, and Choi and Yang [2007] used rainfall shocks as an instrument for household income changes to study the insurance motive for remitting.

In our case, we instrument crimes with information on the perceived safety of each region in Colombia, which is based on the regional average response of households to the question, "Do you feel safe in your neighborhood?" The perceived safety of each region in Colombia should be strongly related to the probability of being a victim of a crime but unlikely to be caused by the amount of remittances that the household receives. For all regions, about 27% of the households responded that they did not feel safe. We used the interaction of the instrumental variable with household characteristics to obtain variation across households because the instrument is constant among households in the same region.[18]

Using the results of the probit estimation, as reported in Table 5, we can examine the impact of the control variables in Table 3 on the likelihood of receiving transfers. The results show that households with older household heads have a higher likelihood of receiving transfers. However, although this variable is statistically significant, the impact is quite small. Also, the

[18] We inspect this variable to corroborate its correlation with crimes by testing its significance in explaining crimes. We also test the exogeneity of the instrument following a methodology similar to the one suggested by Wooldridge [2006, p. 532].

likelihood of receiving both domestic and international transfers increases if the household head is a woman—perhaps because men are more likely to migrate to find a better job to provide extra money to the household or because family members and friends offer more assistance because there is no male provider.

<<INSERT TABLE 5 ABOUT HERE>>

For both domestic and international transfers, households are less likely to receive transfers if the household head is currently employed, in which case the probability of receiving transfers decreases by 10 percentage points (7 percentage points) for domestic transfers (international transfers). Higher household earnings also decreases the probability of receiving transfers. Although the marginal impact of household earnings seems to be small, in general, households with better working conditions have a smaller probability of receiving transfers. As one might expect, these households would require less financial support, thus discouraging altruistic transfers. Similarly, being a homeowner decreases the probability of receiving transfers by about 2 percentage points for both domestic and international transfers.

Turning now to the impact of crime on remittances, the first (third) column of Table 5 shows that the likelihood of receiving domestic (international) transfers decreases by about 7 percentage points (8 percentage points) if a household member has been the victim of a crime. Although some of the results for other variables point strongly toward altruism as the prime motivation for remitting, the result for crimes suggests that a portion of remittances is sent for self-interest purposes.

How Much Do Households Receive?

Next, we explore the determinants of the sum of money that households received. We estimate the following benchmark model to examine the determinants of transfers in Colombia:

$$Y_i = \alpha_0 + \alpha_1 X_i + \alpha_2 Z_i + \varepsilon_i, \quad (1)$$

for $i = 1,\ldots,n$ individuals. The vector Y measures transfers reported by households, X reports on crimes, and Z is a vector of exogenous explanatory variables. However, we cannot estimate the determinants of remittance transfers using ordinary least squares because our remittance transfer variable is censored at zero. If, for example, a household is sending monetary assistance to family members abroad, transfers would be negative. Yet, in our data, transfers are set equal to zero. Due to the lack of information on outward remittances, it is not clear what percentage of households sends money abroad. Moreover, we have a corner solution model because an important fraction of the households did not receive transfers, and, for the others, transfers are strictly positive number.[19]

Our estimation has yet another potential econometric issue: Similar to the probit estimation, there may be reverse causality with remittances influencing crimes. To account for both econometric issues, we conduct an instrumental variable Tobit (IV-Tobit) estimation in which the dependent variable is the amount of remittances received by the household. We follow a similar procedure to the one for the IV-Probit. Table 6 reports the results of the IV-Tobit estimation. The first (third) column reports the results using domestic (international) transfers as the dependent variable. Before examining the impact of crime on remittances, we first review the impact of the other variables on remittances.

<<INSERT TABLE 6 ABOUT HERE>>

[19] See Wooldridge [2002, pp. 517–519] for more details on corner solution models.

In the previous theoretical discussion, we noted that increases in household income should decrease the level of remittances for altruistic purposes, which is confirmed by the results in Table 6. Our results also provide evidence that, in accordance with the probit estimation, households that are homeowners and households with employed household heads receive fewer dollars in transfers. In addition, households with a household member who has been seriously ill during the last year receive higher annual remittance amounts.

However, in contrast with the probit results, age does not have a significant impact on domestic transfers in the IV-Tobit estimation (Table 6). Moreover, the Tobit model results show a difference between domestic and international transfers based on marriage status. Namely, households with a married household head receive less domestic transfers, but the same variable has no significant impact on international transfers.

Our main empirical question is whether transfers increase or decrease after the household is the victim of a crime. The results in Tables 6 suggest that both transfers decrease if a household member was a victim of a crime. Specifically, being the victim of a crime decreases domestic (international) transfers by approximately US$152 (US$414) per year at the mean. Hence, the results for the Tobit estimation are in line with the results of the probit estimation; that is, crime affects both the probability of receiving transfers and the amount received.

This finding highlights the importance of self-interest motivations for transfers of money to households in Colombia. Crime may have a negative impact on household wealth, and, therefore, migrants interested in inheriting from the household assets may decrease remittance transfers following acts of crime against the household. Alternatively, migrants who are investing in their home communities through the household may decrease transfers as crimes

against the household may decrease the expected return to these investments. Despite the validity of these findings, results for other variables such as employment conditions, homeownership, and the income shock, among others, suggest that altruism is also an important motive for remitting.

Robustness

To check for robustness, we substitute the crime variable with a variable that adds 1 for each type of crime (robberies, assaults, extortion, kidnapping, forced eviction, and homicide) that a household member suffered. Hence, a household that was the victim of all types of crimes has a value of 6, and a household that was not a victim of crimes has a value of zero. We then follow a similar instrumental variable procedure for the estimation. The results for the instrumental variable Tobit using this alternative variable to represent crime are reported in Table 7. Results show that domestic (international) transfers decrease by US$186 (US$363) at the mean for each additional type of crime. Results for the control variables are also consistent across specifications.

<<INSERT TABLE 7 ABOUT HERE>>

CONCLUDING REMARKS

This article examines the determinants of remittance transfers using the 2003 Quality of Life Survey of Colombia. We place special emphasis on the impact of crimes on transfers to obtain insights into migrants' motivations to remit.

Results show that both domestic and international transfers decrease with better household working conditions and if a household member owns the home. Both types of transfers are positively related to household size and a household member suffering from a serious illness during the previous year. These results accentuate the role of altruism as a motivating factor for transfers in Colombia. In sum, as previously posited, our findings suggest that better household economic conditions have a negative impact on altruistic transfers, whereas a larger financial need on the part of the household encourages altruistic transfers.

Turning to our findings on how crime impacts money transfers, a preliminary look at the data suggests a positive relation between crimes and transfers. However, once we account for potential endogeneity issues and include other control variables, the results, in fact, indicate that both domestic and international transfers are negatively impacted by crimes. These findings suggest that transfers in Colombia not only have an altruistic basis but also have a self-interest component. Crime may have a negative impact on household wealth, and migrants interested in inheriting from the household may subsequently decrease transfers. Alternatively, migrants who are investing in their home countries through the household may decrease transfers following crimes against the household as these criminal acts may decrease the expected return to investments. Although the results for crimes support self-interest as a motivation for remitting, given the results for other variables we do not discard altruism as an important motivation to remit.

The security situation in Colombia has improved somewhat over the last three years. As a consequence, the economy has performed better than expected. Gross domestic product growth during 2006 was almost 7 %, while inflation was only 4.3% (very low by previous years standards). Our results suggest that these improvements in security may encourage remittance

transfers for investment and other self-interest purposes. At the same time, the improvement in economic conditions should discourage altruistic transfers. The net impact of these changes on total remittance flows is difficult to predict; however, based on the findings of this study, if this pattern continues in the future, self-interest transfers should increase relative to altruistic transfers.

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Appendix A

The second order condition (SOC) for our problem is:

$$SOC = \propto U_{11}^{N}\left[\alpha U_{11}^{N}(c_1^*)^2 + \alpha U_1^{N} c_{11}^* + \gamma\beta W_{11}(c_1^F)^2 + \gamma\beta W_1 c_{11}^F\right]$$
$$+\left[\gamma\beta W_{11}(c_1^F)^2 + \gamma\beta W_1 c_{11}^F\right]\left[\alpha U_{11}^{N}(c_1^*)^2 + \alpha U_1^{N} c_{11}^*\right] \geq 0.$$

Explicit partial derivatives are:

$$\frac{\partial x}{\partial y^*} = \frac{\alpha\alpha U_{11}^{N} U_{11}^{N} c_1^* c_2^*}{SOC} \geq 0$$

$$\frac{\partial \alpha}{\partial y^*} = \frac{-\alpha U_{11}^{N} c_1^* c_2^*\left[\alpha U_{11}^{N} + \gamma\beta W_{11}(c_{11}^F)^2 + \gamma\beta W_1 c_{11}^F\right]}{SOC} \leq 0$$

$$\frac{\partial x}{\partial y} = \frac{\propto U_{11}^{N}\left[\alpha U_{11}^{N}(c_1^*)^2 + \alpha U_1^{N} c_{11}^*\right]}{SOC} \geq 0$$

$$\frac{\partial \alpha}{\partial y} = \frac{\propto U_{11}^{N}\left[\gamma\beta W_{11}(c_1^F)^2 + \gamma\beta W_1 c_{11}^F\right]}{SOC} \geq 0$$

Appendix B

	Description
Independent variable	
Age	Age of the household head in years.
Sex	Sex of the household head. Female = 1, zero otherwise.
Married	Civil status of the household head. Married = 1, zero otherwise.
Household education	Average education level of the household members. The original variable was coded on a 1 to 9 scale for each individual.
Employed	1 if household head is currently employed, zero otherwise.
Household wage	Monthly earnings of all the household members (including in-kind payments) in U.S. dollars.
Income shock	This variable adds 1 for each of the following events: someone in the household lost his/her job, the household had to close a family business, the household was unable to pay for the kids' school for at least 4 consecutive months, the household was unable to pay for college for one of the household members, the household was unable to pay the mortgage for at least 4 consecutive months, the household was unable to pay for public utilities for at least 4 consecutive months, the household was unable to pay the homeowner's association fee for at least 4 consecutive months, the household was unable to pay taxes or the household was forced to sell the house. Thus, the variable goes from 0 (no event) to 9 (all events).
Home owner	1 if a household member owns the house, zero otherwise.
People	Number of people in the household.
Sick	1 if a household member suffered from a serious illness during the previous 12 months, zero otherwise.
Victim	1 if during the last 12 months a household member was a victim of at least one of the following crimes: robberies, assaults, extortion, kidnapping, forced eviction and homicide, zero otherwise.
Crimes	This variable adds 1 for each of the following events: robberies, assaults, extortion, kidnapping, forced eviction and homicide. Thus, the variable goes from 0 (no event) to 6 (all events).
Security	Regional average response to "Do you feel safe in your neighborhood?", No = 1, zero otherwise.
Dependent variables	
International remit	Dummy equal to one if the household received international transfers.
Domestic remit	Dummy equal to one if the household received domestic transfers.
International transfers	Total transfer received by the household from abroad (in U.S. dollars), during the previous 12 months.
Domestic transfers	Total transfer received by the household from others in Colombia (in U.S. dollars), during the previous 12 months.

Table 1 – Predictions of the model

	Impact on Transfers	
	Altruistic	Self-Interest
Variable	(1)	(2)
Migrant's income	+	+
Household income	–	+

Table 2 – Domestic and international transfers

	All Households		Crime Victims	
	Average Amount (US$)	Households (%)	Average Amount (US$)	Households (%)
Type of Transfer	(1)	(2)	(3)	(4)
Domestic	487	19.17	665	25.82
International	827	3.34	931	5.46

Table 3 – Other descriptive statistics

Variable	Mean
	(1)
Age	46.93
Sex (%)	31.83
Married (%)	63.68
Household education	3.71
Employed (%)	72.37
Household earnings	179.36
Income shock	.80
Home owner (%)	52.5
People	3.71
Sick (%)	8.28
Victim (%)	13.8

Table 4 – Remittances (in US dollars) and household earnings.

	Below Average Earnings	Above Average Earnings
Type of Transfer	(1)	(2)
Domestic	481.22	542.51
International	821.52	878.37

Table 5 – IV-Probit remitting equation.

	Domestic Transfers		International Transfers	
	Estimate	*t*-stat	Estimate	*t*-stat
Variable	(1)	(2)	(3)	(4)
Age	0.00	1.91*	0.00	2.31**
Sex	0.09	6.17***	0.07	2.63***
Married	–0.06	–6.32***	–0.02	–1.61
Household Education	0.00	3.22***	0.01	7.66***
Employed	–0.10	–8.28***	–0.07	–3.76***
Household Earnings	–0.00	–4.38***	–0.00	–2.87***
Income Shock	0.02	6.48***	0.05	9.3***
Home owner	–0.02	–2.62***	–0.02	–1.73*
People	0.01	3.94***	0.01	3.82***
Sick	0.04	5.16***	0.08	4.34***
Victim	–.07	–1.66*	–.08	–2.91***
N	22,948		22,948	
LR χ^2	2,009.45***		1,089.24***	
Log Likelihood	–18,089.03		–10,891.367	

Notes: Marginal effects at the average are reported with *t*-statistics. The estimations also include regional dummy variables.***, **, and * indicates statistical significance at the .01, .05, and .10 level, respectively.

Table 6 – IV-Tobit remitting equation.

	Domestic Transfers		International Transfers	
	Estimate	*t*-stat	Estimate	*t*-stat
Variable	(1)	(2)	(3)	(4)
Age	–0.46	–0.49	9.54	3.55***
Sex	291.56	10.47***	332.71	3.96***
Married	–139.73	–4.61***	–119.20	–1.33
Household education	110.28	6.63***	302.52	6.63***
Employed	–453.75	–18.72***	–516.47	–7.05***
Household Earnings	–.27	–6.78***	–.55	–4.28***
Income Shock	86.38	3.61***	226.91	3.53***
Home owner	–51.38	–2.29**	–150.79	–2.21**
People	26.17	3.23***	62.93	2.71***
Sick	170.16	3.18***	429.13	2.94***
Victim	–152.10	–1.74*	–413.88	–1.79*
N	22,948		2,2948	
Uncensored observations	4,398		779	
LR χ^2	1,201.60***		314.81***	
Log Likelihood	-51,386.28		-17,013.54	

Notes: Marginal effects at the average are reported with *t*-statistics. The estimations also include regional dummy variables.***, **, and * indicates statistical significance at the .01, .05, and .10 level, respectively.

Table 7 – IV-Tobit remitting equation using alternative variable for crimes

	Domestic Transfers		International Transfers	
	Estimate	*t*-stat	Estimate	*t*-stat
Variable	(1)	(2)	(3)	(4)
Crime	–186.36	–2.02**	–363.40	–1.67*

Notes: Marginal effects at the average are reported with *t*-statistics. The estimations also include regional dummy variables.***, **, and * indicates statistical significance at the .01, .05, and .10 level, respectively.