To Send, or Not to Send: That is the Question. A Review of the Literature on Workers' Remittances

Isabel Ruiz
Sam Houston State University • Huntsville, TX
Carlos Vargas-Silva
Sam Houston State University • Huntsville, TX

Abstract

This paper reviews the empirical literature on workers' remittances. Based on the empirical evidence, we are able to assess the facts and myths about the determinants and consequences of remittances. We also discuss the potential implications of our findings for the theoretical literature on remittances and account for the open-ended questions that still remain. The review suggests that there are several motivations to remit and it does not seem that one specific motivation has been consistently selected over the others. The literature also suggests that remittances have the potential to impact a large number of variables related to the recipient country and household.

Introduction

The large increase in remittances (money transfers from migrants to family and friends back home) during the last two decades has stimulated a keen interest in understanding the nature and economic consequences of these flows. Policymakers in developing countries and international organizations around the world have become interested in increasing the flow of remittances, finding ways to channel remittances into productive investments, and diminishing the possible detrimental impacts of these transfers. On the other hand, due to concerns regarding money laundering and terrorism support, policymakers in developed countries are interested in seeing a larger share of remittances sent through official channels. In fact, policymakers and government officials from countries that are host to large communities of migrants are encouraging increased supervision on the part of receiving countries on the use of remittances.

The remittances phenomenon has also drawn attention from the private business sector. Given the potential for profit in the money transfer business, there has been a proliferation of money transfer agencies. Banks have also been encouraged to participate in the remittances market, not only by being more competitive in their fees and processes, but also by recognizing that offering remittance services can help in attracting migrants to open bank accounts in the host country.

In this article we present a review of the empirical literature on remittances. That is, we want to assess the different conclusions that have been drawn from the data and evaluate what can be said with relative confidence about remittances. We also want to highlight the open-ended questions that still remain and ascertain the facts that are still in doubt.

Organization of the Literature Review

The literature on remittances is divided into two main areas of study. The first area investigates the nature and determinants of these flows. We look at questions like: What prompts a migrant to remit? What factors determine the amount of remittances they send? The second area of study is concerned with the impacts and consequences of these money transfers. That is, we look at the impacts of these money flows on the receiving countries and on household behavior. We look at questions such as: How are these flows affecting family composition? What are the consequences for the distribution of labor? What are the impacts on prices, the exchange rate and the overall economy? To answer those and other related questions we review the extant literature and differentiate between the different studies that use data on the migrant, the household (or both) and those that use aggregate economic data.

The literature on the determinants of remittances, our first area of study, is divided into two specific groups. The first group includes those studies that use microeconomic level data to study the determinants of remittance transfers. Most of these studies make use of survey data on the emigrants and/or the receiving households. This type of study is usually interested in the relationship between remittances and individual specific factors such as income (household and migrant), gender, age, time abroad, marital status and household composition, among others. The second group includes those studies that use macroeconomic level data to study the determinants of remittances. This type of study is usually interested on how variables like interest rate differentials, political uncertainty, exchange rates and economic conditions (host and home country) impact remittances. Time series data in one country or a panel of countries are typically analyzed in this literature.

The literature on the impacts and consequences of remittances, our second area of study, is also divided into papers that use microeconomic level data and those that use macroeconomic data. The first group in this area includes those studies that are focused on the impact of remittances on variables related to the household, such as household consumption patterns, migration patterns, labor supply and investment decisions, among others. The other category of study analyzes the impact of remit-

tances on macroeconomic variables of the receiving country such as the exchange rate, GDP growth, income inequality, poverty levels and prices.

It is important to note that this literature review concentrates mostly on articles that use economic theory and econometric techniques to study topics related to remittances. A large number of articles exist in other fields of the social sciences (e.g. sociology, political science, geography, psychology, among others) that study remittances from a different perspective. Those articles, while beyond the scope of this review, contain important results and the reader is encouraged to consult them. Neither is this review a complete list of papers in the remittance literature. We focus on some of the relevant works that we feel represent the general trend of the literature. Finally, we are not doing a comprehensive review of the papers that we cite, but highlight what we think are the most interesting aspects on each of the papers cited. Please refer to the original source for more details on these studies.

An overview of remittance flows

The impact of remittances varies vastly across regions of the world, due to differences in culture, migration patterns and the stage of economic development. According to the Inter-American Development Bank (IDB), remittances received by Latin America Countries (LAC) in 2007 reached over 66 billion U.S. dollars (IDB, 2008). Table 1 contains the share and amount of remittances received by the five largest recipients of remittances in Latin America during that year. The main recipient of remittances (in terms of volume) was Mexico with over 23 billion dollars and 36 percent of the total inflows, followed by Brazil with about 7 billion U.S. dollars. While Mexico and Brazil receive a huge flow of remittance transfers, in terms of GDP the importance of remittances is relatively small (2.9 % for Mexico and .3% for Brazil). In contrast, in at least seven other Latin American countries (El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica and Nicaragua) remittances account for more than 10 percent of GDP.

Most of these money transfers originate in the U.S., making remittances an important factor in the economic relationship between the U.S. and Latin America. It is estimated that about 43 billion U.S. dollars were sent from the U.S. to LAC in the year 2006 (IDB, 2008). The information in Table 2 shows that the remittance outflows from the U.S. come mainly from states with large concentrations of Hispanics. Five states alone (California, Texas, New York, Florida and Illinois) sent more than 20 billion U.S. dollars in 2006. In total these five states accounted for about half of the total U.S. remittance outflows.

Table 1
Worldwide Remittance Flows to Latin America in the Year 2006
in Billions of U.S. Dollars

Country	Percent of Total	$ Amount
Mexico	36%	23.98
Brazil	11%	7.01
Colombia	7%	4.52
Guatemala	6%	4.13
El Salvador	6%	3.69
Total to LAC	**100%**	**66.50**

(Data Source: IDB)

Table 2
Remittances by State in the Year 2006
in Billions of U.S. Dollars

State	$ Amount
California	13.19
Texas	5.22
New York	3.71
Florida	3.08
Illinois	2.58

(Data Source: IDB)

Table 2 reports only on the aggregate amount of remittances sent from each state. An interesting question is, which state sends more money per migrant? For instance, there is a big gap between remittances sent by immigrants in California and remittances sent by immigrants in other states. Are migrants in California more generous on average? In Table 3 we list the five states that send the most money per migrant. None of the states in Table 2 is included in Table 3. This indicates that those states with large concentrations of Hispanics are not the ones sending more money per migrant.

In the aggregate, remittances are second to FDI as a source of external financing in developing countries. But in many regions and countries remittances have surpassed FDI as a source of external financing. In Africa between the years 2000 and 2003 remittances averaged 17 billion U.S. dollars, while FDI averaged only 15 billion dollars. However, Official Development Assistance (ODA) still remains as Africa's largest external source of financing with about 25 billion U.S. dollars per year (United Nations, 2005). In Latin America, however, not only have remittance

flows to the region surpassed FDI flows, remittances are more than ODA in each single country in the region.

Table 3
Remittances per Migrant and State (or Territory) in the Year 2006 in U.S. Dollars

State	$ Amount
Georgia	2,897
Washington, D.C.	2,864
Maryland	2,797
Virginia	2,732
Pennsylvania	2,671

(Data Source: IDB)

Remittances to Asia and Oceania comprise the highest regional total in the world. According to International Fund for Agricultural Development (IFAD) (2006) Asia and Oceania receive more than U.S. 113 billion dollars in remittances annually. Just India and China combined received about 45.6 U.S. billion dollars. It is also the case that remittances to smaller economies like Indonesia, Nepal and Taijkistan, constitute a large portion of their per capita income.

The evidence is quite strong that the large magnitude of remittances flows around the world is critically important for receiving countries. We can now proceed to discuss how the previous literature has studied these flows.

The Nature and the Determinants of Remittances

Microeconomic Determinants of Remittances

There has been considerable debate about the migrant's motivations to remit. The most commonly accepted motivation for remittance transfers is altruism; that is, migrants care about the home household's well-being and remit to improve living conditions. If altruism is a motivation to remit, variables related to household well-being (e.g. household consumption) should enter the migrant's utility function. A change in variables affecting household well-being, for example a decrease in the household's income, should encourage more 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 commonly mentioned is investment in the home country. Perhaps the emigrant does not have good investment opportunities available in the host country and therefore decides to invest in the home country. It may also be the case that the migrant simply plans to retire in the home country and therefore concentrates his/her investments in that country. In a related argument, it has been argued that some emigrants send remittances because they hope to benefit from the household's gratitude when returning home. This gratitude may materialize as a portion of the household inheritance. If self-interest is the motivation for remittances then changes in the expected return to investment in the home and host country, changes in the amount and possibility of inheritance, and related factors should affect the level of transfers.

There is another set of studies that argues that remittances are sent for insurance purposes. 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 mostly uncorrelated to those that the household faces; hence, the migrant and the household are able to diversify their risks. The emigrant can buy insurance against bad economic times in the host country by sending remittances to the household or have a coinsurance agreement with the household in which the emigrant supports the household during tough economic times in the home country and the household supports the emigrant during tough economic times in the host country. There will be evidence of insurance motivations if remittances respond to risk variables (e.g. emigrant's income risk). The theoretical models of remittances and insurance typically include a Von-Neumann type expected utility function in which emigrant's and/or household income is uncertain.

Finally, there is a group of papers that makes the case that the emigrant is paying back to the household for the investment made in him or her when he or she was younger. In this case there is an implicit loan arrangement between the household and the emigrant. In the first stage the household invests in the emigrant and in the second stage the emigrant pays back with transfers. The initial investment can be in terms of educational expenses from the household or money to cover the costs of migration. If this theory is correct we expect to see that emigrants whose parents invested more in their children and those migrants who come from countries where the costs involved with migration are higher will remit more.

In one of the first studies related to remittances, Lucas and Stark (1985) used information from Botswana to study the determinants of remittance transfers. Lucas and Stark (1985) found evidence of the insurance and loan repayment motivations. Strong evidence in favor of altruism was not uncovered. In order to test for the

loan repayment motivation, Lucas and Stark (1985), constructed a dummy variable equal to one if the emigrant was the son (daughter), nephew (niece) or grandchild of the household head, because educational investments are more likely to be made on these children relative to other children living in the house (e.g. sons-in-law and daughters-in-law). They interact this dummy variable with the education level of the emigrant. The results show that the interaction between the two variables is positively related to remittances. The authors take this result as evidence of the loan repayment hypothesis.

The insurance motivation to remit was tested using data from a drought that occurred in Botswana at the time of the survey. They differentiated regions by the seriousness of the drought (measured as rainfall in that year divided by the average rainfall in the last 30 years). They interact this variable with the log of the number of crop acres and number of cattle that the household owns. Lucas and Stark (1985) posited that if a coinsurance agreement was in place between the emigrant and the household, households with a higher risk of losing crops or cattle, given the seriousness of the drought would receive more transfers (i.e. to gain access to more water sources). Although their results support the insurance motivation for remitting, they note that, given the lack of enforceability of the insurance arrangements migrant's behavior may still imply that they acted in an altruistic manner.[1]

There has been a series of papers that, like Lucas and Stark (1985), did not find strong or exclusive evidence in favor of altruism and also find that migrant's motivations for remitting are more complex. Brown (1997) distinguishes between demand-side variables (e.g. family location), supply-side variables that affect the migrant's capacity to remit (e.g. migrant's income) and motivational variables that account for the most commonly mentioned motives for remitting (e.g. economic condition of the household for altruistic transfers, expectation about inheritance and investment in the home country for self-interest transfers and financial aid received from the household for migrating for the loan repayment hypothesis). Brown (1997) finds that in addition to altruistic intentions, migrants in the Pacific Islands of Tonga and Western Samoa, have strong self-interest motives, mainly investment and asset accumulation, for remitting.[2]

Hoddinott (1994), using survey data from Kenya, also rejects altruism as the sole motive to remit and finds evidence of interest in inheritance and loan repayment motivations. Hoddinott (1994) argues that if emigrants remit because the household members are threatening (not necessarily explicitly) the emigrant with losing his right to inheritance, then remittances should respond to the credibility of this threat. For example, if the emigrant is an only son then the credibility of this threat is weak.

Moreover, remittances should also respond to the availability of assets (e.g. land) by means other than inheritance. If land is widely available and affordable then there will be little incentive to remit in order to secure the inheritance of land from the household. For the specific region in which Hoddinott's (1994) study was concentrated, the finality of transfers of land through sale is not universally accepted and vendors often try to reclaim land after selling it. This creates an additional incentive for the migrants to secure the inheritance of land directly from their parents (instead of purchasing the land) and therefore motivates remittances.[3] Hoddinott (1994) found that as the number of adult sons of the household head increases (more competition for inheritance) remittances also increase.[4]

Vargas-Silva (2009) used data from Colombia to find that remittances respond negatively after a household member was the victim of a crime. The author argues that because crimes may have an adverse effect on household assets and the return to investments in the home community, migrants may decrease transfers made for self-interested purposes such as future inheritance or investment. Although his results suggest that a portion of transfers are sent for self-interest motives, Vargas-Silva (2009) cautions that variables related to the household indicate that altruism is also an important motivation for remitting.

In distinction from the results obtained by most of these previous studies that do not find direct strong evidence of altruistic motives for remitting, Agarwal and Horowitz (2002), in a study using survey data for Guyana, found evidence in favor of altruism. Agarwal and Horowitz (2002) 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 amount of money 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. The results in Agarwal and Horowitz (2002) suggest that altruism is the main motivation for remittance transfers.

A problem with survey data is that while it would be ideal to have information on the migrant and the household, surveys typically include information on the migrant or the household only. One study that overcomes this limitation is Osili (2004). In her study, Osili collected data in two stages. During the first stage she conducted interviews among Nigerian migrants in Chicago. During the second stage she used

the names and addresses supplied by the U.S. immigrants to conduct interviews of their families in Nigeria. The result was a matched sample of migrants and households. Her results suggest that wealthier families tend to receive fewer transfers (evidence of altruism). However, remittances sent to finance home investments are positively associated with household's wealth.[5]

Other papers have found evidence that remittances are in fact being used as insurance. One of the complexities of testing for the insurance motive for remitting is that the altruism and insurance motives for remitting are difficult to distinguish from one another. If the household's income in the home country decreases and remittances increase, the migrant may be behaving altruistically or may be responding to an insurance agreement. Amuedo-Dorantes and Pozo (2006a) try to disentangle these two motives. Using Mexican survey data they found that increasing income uncertainty in the host country increases remittances. U.S. immigrants subject to greater levels of risk (as in the case of undocumented immigrants relative to documented immigrants) remit more. They argue that this result implies that migrants are risk-averse individuals who, in the face of greater earnings uncertainty, insure themselves by increasing transfers. However, given that increasing income uncertainty in the host country does not directly impact remittances sent for altruistic purposes (there is no additional need on the part of the household), this result can be useful as a measure of the insurance motive for remitting that is not mixed with the altruistic motive.

The previous papers emphasize the role of variables strongly related to the traditional motives of remitting as determinant of remittances. Other series of studies, however, have focus on indentifying patterns of remitting according to some demographic variables, such as gender. For instance, Osaki (1999) reports that in Thailand children are expected to repay their parents for time and money invested in raising them. Under Buddhist traditions, males can earn religious merit for their parents if they become ordained and spend a period of their lives in monkhood. This option is not available for females; thus, in Thailand, it is expected that female immigrants are more likely to contribute financially to the household via remittances. Osaki (1999) tests this proposition by including a gender dummy variable in her remittance equation. The gender dummy variable is not a significant determinant of remittances in the case of Thai migrants. However, in separate estimations by gender, she finds differences in the coefficients for males and females for a number of conditioning variables.[6]

Do gender differences in remitting behavior exist for Hispanics? Previous empirical studies suggest they do exist. In a study of migration from the Dominican

Sierras, de la Briere et al. (2002) find that female migrants are more likely to remit to stabilize Dominican household income when compared with male emigrants. Moreover, Blue (2004) studies Cuban emigrants and finds that female migrants are more altruistic than their male counterparts. Females are more likely to remit and the dollar amounts that they remit are on par with the amounts remitted by males, despite their generally lower earnings. Hence, according to Blue women remit more than men when looking at remittances as a share of income.

Blue (2004) also focuses on the political determinants of remittances by looking at remittances flows to Cuba. By focusing on political ideology Blue is able to show that there were no political disincentives in the flow of remittances to Cuba. This is especially important for the case of Cuba in which according to Blue (2004) "right-wing Cuban exiles have argued that remittances serve to prop up Fidel Castro's government."

Another idea that has received considerable attention in the literature is that if altruistic attachment decreases over time and altruism is the main motivation for remitting, then remittances should also decrease over time. This idea is known as the remittances decay hypothesis. If the remittances decay hypothesis is correct we should see a strong negative relationship between remittances and the time since migration took place. In terms of theoretical models this implies that the utility obtained by the emigrant for household consumption is decreasing over time.

Funkhouser (1995) uses survey data from El Salvador and Nicaragua to uncover evidence on the remittances decay hypothesis. However, he cautions that given the size of the coefficients even if the migration rate decreases, remittances are going to fall only gradually. A sudden stop in migration will lead only to a gradual decrease in remittances.[7]

It is also possible that not only the length of the stay, but the planned duration of the stay can have an effect on remittances. Merkle and Zimmerman (1992) found that there is a negative relationship between remittances and the planned length of the stay of the emigrant in the host country. If the actual length of stay is included along with the planned length of stay, only the latter is found to be significant.

The Macroeconomic Determinants of Remittances

In this section we discuss the macroeconomic determinants of remittances. Previous studies have shown that the decision to remit may be influenced by the behavior of macroeconomic variables on both the source and host countries. Along those lines, we discuss the different studies that have used macroeconomic vari-

ables (exchange rates, interest rates, etc.) in uncovering the determinants of these money flows.

Migrants who settle in the U.S. earn money in U.S. dollars, but their transfers to family and others back home are usually converted into the domestic currency (e.g. Mexican pesos). Depreciations of the home currency can increase the purchasing power of remittances in the home country. Moreover, if the household is converting remittances into local currency then immigrants should adjust the amount of the transfer in response to changes in the exchange rate. For instance, after a real depreciation of the domestic currency, each U.S. dollar of remittances will be worth more to the household. This means that the household needs fewer U.S. dollars to consume a certain bundle of goods. If the purpose of the transfer is to make a certain bundle of goods available to the household, then the emigrant should decrease the amount of U.S. dollars that he/she is sending back home. Furthermore, if the immigrant is making a long-term investment with remittances or remitting to build a retirement nest-egg, then fewer U.S. dollars are required to reach certain target levels of investment.

On the other hand, now each U.S. dollar of remittances is worth more in the home country. If the immigrant has investments in both countries, but plans to return eventually to the home country, then it may be useful to take of advantage of the depreciation by investing more in the home country. Also, it is possible that the immigrant wants to send more because each U.S. dollar of remittances will benefit his/her family more. For instance, it is possible that after the depreciation the household will be able to send children to a better school by receiving some more U.S. dollars.

In sum, remittances may increase or decrease after a depreciation of the local currency depending on which of these two effects dominates. Similarly increases in the interest rate of the home country relative to the interest rate of the host country increase the relative return to investment in the home country and can have contradictory impacts on remittances flows. The higher interest rates in the home country may encourage more transfers for investment purposes; however, the additional return on existing investments in the home country may discourage transfers and encourage consumption in the host country. We must rely on the empirical evidence to determine the impact of these macroeconomic variables.

El-Sakka and McNabb (1999) study the macroeconomic determinants of official remittances using macroeconomic level data for Egypt.[8] Their results show that home and host interest rate differentials and the difference between the official exchange rate and the black market exchange rate are significantly negative determinants of official remittances. The above result was in line with the findings

by Katseli and Glytsos (1986). Some countries peg their currency at levels that differ significantly from the market rate. As a consequence these countries will have an overvalued currency and an excess demand for foreign exchange. If there is a black market premium the receiving households may decide to use the black market to convert remittances into local currency. This may induce the emigrant to send remittances through unofficial channels (where it will be easier to access the black market) instead of through official channels.

Yang (2008) takes advantage on information on migrants' remittances during the 1997 Asian financial crisis to study the impact of exchange rate shocks on remittances. Filipinos migrate to a wide variety of countries. During the 1997 Asian financial crisis, Filipino migrants experienced sudden and heterogeneous changes in exchange rates. Using this information Yang (2008) is able to examine how migrants respond to a randomly-sized economic shock. His results suggest that appreciation of a migrant's currency against the Philippine peso leads to increases in household remittances received from overseas.

Pozo and Vargas-Silva (2008) take a somewhat similar approach to Yang (2008), but instead of studying one source country with multiple host countries, they focus on the case of multiple source countries and only one host country. Using information from migrants to the United States that participated in the Immigration Reform and Control Act (IRCA) of 1986 they study the impact of exchange rates on remittances using data from migrants from a broad array of countries.[9] They find limited evidence that remittances respond positively to current home country real exchange rate depreciations and robust evidence that remitters remit less due to future weakening of the home currency.

Faini (1994) tests the importance of exchange rates and interest rates, among other macroeconomics variables, as determinants of remittances using data from emigrants in Germany. Results show that interest rate differentials (home – host) and exchange rates (home currency vis-à-vis host currency) are positive and significant determinants of remittances. Contrary to El-Sakka and Mcnabb (1999), Faini (1994) finds that home and host country GDP are important determinants of remittances (home country GDP negatively impact remittances, while host country GDP positively impact remittances).

The result that interest rates and exchange rates are significant determinants of remittances is not universal. In one of the first macroeconomic papers about remittances Swamy (1981), using data from Greece, Turkey and Yugoslavia, found that most macroeconomic variables did not affect remittances. Straubhaar (1986) found that interest rates and exchange rates did affect the flow of remittances to Tur-

key.[10] Vargas-Silva and Huang (2006), using data for various Latin American countries, also provided evidence that several home country macroeconomic variables were not able to explain remittances. In general, Vargas-Silva and Huang (2006) concluded that remittances respond more to host country macroeconomic variables than home country macroeconomic variables.

Other papers test for exchange rate uncertainty as a determinant of remittances. If emigrants are risk averse an increase in exchange rate uncertainty, which increases the uncertainty about the purchasing power of remittances in the home country, may have a negative effect on remittance flows. Higgins et al. (2004) study the effect of exchange rate uncertainty on remittances using data from nine countries. Results show that an increase in the volatility of the exchange rate decreases remittances. In another study Hysenbegasi and Pozo (2008), using data for 23 Latin American countries show that the timing of remittances responds to exchange rate crisis. Specifically, they find that emigrants avoid remitting when the exchange rate is under pressure, which the authors interpret as evidence that remitters try hard to reduce their exposure to exchange rate losses by taking into account the expected future value of their transfers.

A different strand of the literature asks if remittances respond to cyclical fluctuations in the home and host country. A clear understanding of the business cycle and its relationship with remittances is necessary for countries with large remittance inflows in order to react adequately to cyclical fluctuations in output. For instance, if remittances are countercyclical with respect to the home economy, receiving countries could potentially use remittances as part of their strategy to offset negative cyclical fluctuations in output. The relationship between remittances and the business cycle of the host country is also relevant. If remittances are not responsive to the host country business cycle, then we should not expect drastic decreases in remittances after downturns in the host economy. Alternatively, if remittances are strongly correlated with the host country business cycle, remittances can become another channel by which cyclical fluctuations in the host economy can impact the home country.

Roache and Gradzka (2007) investigate whether remittances to Latin America depend on the U.S. business cycle. Their results suggest that remittance flows are, in general, insensitive to the U.S. business cycle. Vargas-Silva (2008), using data for Mexico, reaches similar conclusions about the impact of the US business cycle on remittances. However, the results of Vargas-Silva (2008) suggest that remittances are countercyclical with respect to Mexico's business cycle, although this last result is not robust to the use of different measures of remittances.

The Economic Impacts and Consequences of Remittances

The Macroeconomic Impact of Remittances

Remittances have the potential to impact a large number of variables in the recipient country. Therefore the literature that tries to assess the macroeconomic impact of remittances is varied in its scope and its conclusions. Broadly speaking, remittances may have both beneficial as well as detrimental effects. While effects like augmentation of the capital stock through financing investment are conducive to growth, other impacts such a decrease in labor supply and a negative impact on the tradable sector have adverse consequences for the receiving country.

One of the main arguments from those arguing that remittances have a positive impact on economic development is that remittances are often used for investment in the home country. For example, there is evidence that remittances are typically invested in housing and small businesses in receiving countries.[11] Moreover, even if remittances are simply spent on consumption it can be argued that the additional demand for products in the home country can benefit the receiving economy.

One of the main arguments of those arguing that remittances negatively affect economic development is that remittances can create inflationary pressures or cause a phenomenon similar to Dutch Disease. After receiving remittances in a foreign currency, the household will exchange these remittances for local currency. This can appreciate the local currency and crowd-out exports.[12]

As mentioned above, at the macroeconomic level remittances may impact several variables including prices and the exchange rate. Amuedo-Dorantes and Pozo (2004a), using data for 13 Latin American and Caribbean countries, finds that remittances cause appreciation of the real exchange rate. Using data for Cape Verde, Bourdet and Falck (2006) also find some evidence of remittances causing Dutch Disease type phenomenon: real exchange rate appreciation crowds out exports. Vargas-Silva (2009) provides further evidence of real exchange rate appreciation for the case of Mexico. However, this last result about the impact of remittances on exchange rates is not universal. For instance, Amuedo-Dorantes et al. (2007), focusing in the case of small-island developing states, show that while foreign aid tends to appreciate the real exchange rate, remittances do not have the same impact.[13]

The impact of remittances on prices, however, has remained largely unexplored. Exceptions include Balderas and Nath (2008) and Nath and Vargas-Silva (2008). Balderas and Nath (2008) provide some evidence of remittances driving

relative price variability in Mexico, while Nath and Vargas-Silva (2008) suggest that there are important differences in the responses of relative prices to remittances according to various categories of these items. While the prices of a number of non-tradable service items such as housing consistently rise, the relative prices of several durable items such as furniture tend to fall in response to the remittance shock.

Other studies have focused directly on the relationship between remittances and economic growth. For example, Chami et al. (2005) used data for 113 countries to find that remittances are negatively correlated with GDP growth. They argue that remittances are not intended to be a source for capital development, but are just compensatory transfers. Giuliano and Ruiz-Arranz (2005) find that remittances promote growth in less financially developed countries. They argue that remittances provide an alternative way of financing investment and helping to overcome liquidity constraints. Similarly, Mundaca (2005) finds that remittances have a positive effect on growth. Mundaca (2005) argues that financial market development may boost the long-run effects of remittances on growth. Finally, Ruiz et al. (2009) re-examined the relationship between remittances and economic growth placing special attention to the non-linearity of this relationship. They show that the relationship between remittances and growth is neither linear nor quadratic and propose the use of a semiparametric model to avoid the risk of misspecification bias from imposing an arbitrary functional form. Their results suggest that there is a positive relationship between remittances and growth in parametric estimations; however, such relationship disappears when non-linearity is taken into account using nonparametric techniques. Finally, Glytsos (2001) used data for five Mediterranean countries (Egypt, Greece, Jordan, Morocco and Portugal) to find mixed evidence on the role of remittances in economic development. Remittances were shown to be capable of boosting growth and of moderating recessions in some cases, while in others remittances affected growth negatively and accentuated recessions.[14]

Remittances can also have an impact on the distribution of income. Findings are mixed on this issue. Usually in countries (or villages) with a long history of migration remittances are found to decrease inequality but in countries (or villages) without a long history of migration remittances increase inequality. In the first stage of migration only those households with high income are able to cover the cost of migration and benefit from remittances. This would initially increase income inequality. But as migration becomes more frequent, the cost of migration decreases. This decrease in the cost of migration is the consequence of the development of a network of migrants in the host country. In this stage poor households will be able to send relatives abroad and benefit from remittances. This effect of remittances in

inequality is important, among other reasons, because if remittances decrease inequality, then it can be even argued that remittances are politically stabilizing.

Stark et al. (1986) uses data for Mexico and finds that the effect of remittances on inequality depends, indeed, on the composition of the village. Their results show that in a village with a large proportion of internal migrants (migrants within the same country) remittances from the U.S. increase income inequality, while remittances from internal emigrants decrease income inequality. The opposite result was true for villages with a large proportion of emigrants to the U.S.[15]

The Microeconomic Impact of Remittances

As mentioned in the discussion above, the effect of remittances on economic growth is strongly related to the way the household uses remittance money. If we treat remittances as a source of household income, other things being equal, an increase in remittances shifts the receiving household's budget constraint outward by the amount of the transfer and therefore should have a positive impact on household consumption. However, the potential increase in consumption is not likely to be equal across the spectrum of all goods and services. In fact, previous studies suggest that remittances increase the consumption of some goods and services more than that of others. Adams (2005), using data for Guatemala, finds that the remittance receiving households spend more on education, health, and housing, and less on food than do other households. Similarly, Taylor and Mora (2006), in a study using household level data from Mexico, conclude that the propensity to invest appears to be considerably larger for households with migrants. Zarate-Hoyos (2004) shows that Mexican remittance-receiving households devote a larger proportion of current expenditures to investment and savings, and have lower income elasticities for current consumption and for durable goods.

The reasons for the differences in consumption behavior and the levels of investment and savings of remittance-receiving households and those of households that do not receive remittances are not clear. It is possible that the household sees remittances as a temporary stream of income instead of permanent income and that the deviations in consumption patterns are due to the temporary nature of these transfers. It may also be possible that remittances come with a constraint on their potential uses. That is, in order to remit the migrant might expect a certain pattern of consumption and savings from the household.

However, some studies (especially earlier studies) conclude that remittance transfers are spent mostly on food. For instance, Orozco (2003) argues that the Mex-

ican families receiving remittances from abroad typically spend over 75% of that money on their daily needs such as food and clothing. Orozco (2003) also presents similar evidence for Nicaragua and El Salvador, where over three-quarters of the population spent their remittances on food alone.

Remittances may also impact the labor supply of the receiving households. For instance, it is possible that after receiving remittances the labor supply of some household members decreases. After all, an increase in remittances is an increase in income and leisure is a normal good. Thus, the household would be expected to demand more leisure after receiving remittances.

Hanson (2005), using survey data from Mexico, found that the remittance receiving households are less likely to participate in the labor force. The result was stronger for women in the household. In contrast, Amuedo-Dorantes and Pozo (2006b) find no evidence that Mexican males reduce labor supply in response to remittances. Instead the authors argue that Mexican males tend to vary their allocation of labor supply across types of employment. For the case of females, Amuedo-Dorantes and Pozo (2006b) argue that there is a drop in overall labor supply.

There could also be a relationship between receiving remittances and having a small business in the home country. Remittances can give the household the initial capital necessary to start a small business. This is especially important in developing countries where credit markets are not well developed. Amuedo-Dorantes and Pozo (2006c) used data for the Dominican Republic to find that the probability of business ownership decreases with the receipt of remittances. However, business ownership does attract remittances suggesting that those businesses are helped by these inflows. In a study for Mexico, Woodruff and Zenteno (2001) found evidence that remittances were affecting microenterprise development positively. Moreover, they argue that remittances are responsible for almost 20% of the capital invested in microenterprises throughout urban Mexico.

There are a number of papers that study the impact of remittances on schooling in the home country. There are several hypotheses that support the notion that remittances may increase the education of children in the household. For instance, the receipt of remittances relaxes the budget constraint of the household allowing the household to cover the cost of sending children to school. Also, the need for children to be involved in income generating activities decreases as a result of the additional income. One additional possibility is that senders of remittances explicitly want the children in the household to attend school. If we see remittances as an intergenerational process, the emigrants may plan to retire in the home country and these children will be supporting them financially. One specific example can be

found in the results obtained by Edwards and Ureta (2003). Using data for El Salvador, they find that remittances affect school retention positively. The effect of remittances on school retention was stronger than the effect of other household income. Somewhat different to these results, a study by Borraz (2005) finds that, for the case of Mexico, remittances have only a slight increase on child education.

The issue of remittances and schooling can also be more complicated than what the previous discussion suggests. When one of the parents migrates there is a disruptive effect on the family and this can affect the education of the children negatively. But as mentioned above if the household receives remittances, then this relaxes the budget constraint of the household and they can afford to send children to school. It seems that migration of one parent (or maybe both) has a negative impact on schooling, but remittances have a positive impact. In a study for the Dominican Republic, Amuedo-Dorantes and Pozo (2006d) found that indeed while migration had a negative effect on the schooling attainment of the children left behind, remittances had a positive effect on schooling. The result was stronger for girls than for boys.[16]

Concluding Remarks

The purpose of this article was to review the empirical literature on workers' remittances. The aim was to determine what the data, so far, is telling us about the determinants and consequences of these flows. In doing so, our hope was to uncover what can be said with relative confidence about remittances and to assess facts and myths about remittance transfers. As we have shown in this review the results obtained in the remittance literature seem to suggest that there are several motivations to remit. Some of the motivations to remit that are constantly mentioned in the literature include altruism, self-interest purposes (e.g. investment, inheritance), insurance and loan repayment motives. Evidence for these motivations to remit are implied by the response of remittances to certain microeconomic variables such as income (migrant and household), cost of migration, investment in the education of the migrant and possibility of inheritance, among many others. Along with these microeconomic determinants the literature also suggests that macroeconomic variables such as interest rates and exchange rates may also impact remittance flows. Remittances have also been found to have an impact in a large number of microeconomic and macroeconomic variables that include, among others, the labor supply of the receiving household, exchange rates and output growth.

The theoretical literature on remittance transfers has made strong assumptions about the motivations for remitting and the implication of remittance flows.

For instance, several papers studying the macroeconomic impact of remittances have assumed that remittances are altruistic transfers from migrants. Our review of the literature on remittances suggests that while there is some evidence that a portion of remittances are altruistic transfers, results show that there are many other reasons for remitting. Hence, assuming that remittances are purely altruistic transfers is unrealistic and holding that assumption may result in inadequate conclusions. Several previous theoretical studies have also assumed a specific relationship between remittances and home country output in order to construct their models (e.g. output decreases and remittances increase). Our review also suggests that the relationship between remittances and home country income is at best mixed.

Finally, we have seen that the uses of remittances on the part of the households are diverse and therefore, the theoretical models should not simply assume that remittances are equal to other sources of money. Often, remittances flows come with conditions about the uses that remittance-receiving households can give to this money. In addition to the implications that this has for the budget constraint of remittance receiving households, several studies support the hypothesis that remittance-receiving households simply behave differently than their non-remittance receiving counterparts.

Overall, our suggestion is that future theoretical models of remittances should adjust their models so that they reflect the diversity of findings in the empirical literature. There are no established facts about the motivations for remittances; therefore, strong and static assumptions in theoretical models can be unrealistic. Strong assumptions only imply that these theoretical models apply to some types of transfers and not necessarily to the case of remittance transfers in general.

Notes

1. Gubert (2002) uses data for Western Mali to test for the possibility of a mutual insurance contract between the emigrant and the household. Following the idea of Lucas and Stark (1985), the author develops a number of variables that are representative of shocks to household income, constructed using data from the crop production of the household. The author reports some evidence that remittances respond to these shocks variables, which he interprets as evidence of a coinsurance agreement between the household and the emigrant.

2. See also Ahlburg and Brown (1999), Brown (1994) and Connell (2000) for more on remittances in the South Pacific.

3. In Hoddinott's (1994) study, most migrants intended to return to their homes at some point.

4. See Hoddinott (1992) for more on remittances in Kenya.

5. See Osili (2007) for more on remittances in Nigeria.

6. VanWey (2004), in another study using data from Thailand, found that women and migrants from poorer households behave more altruistically, while men and migrants from richer households behave more contractually.

7. Contrary to this result, Brown (1997) fails to find evidence of remittances decay overtime.

8. See Feiler (1987) and Wahba (2004) for other studies related to Egypt.

9. The IRCA gave undocumented immigrants in the U.S. the opportunity to obtain amnesty and become legal permanent residents. The IRCA consisted of two phases. In the first phase about 1.8 million undocumented immigrants applied and qualified for temporary legal residency. One of the requirements to qualify was living in the U.S. prior to the year 1982. Those who qualified were given 18 months to satisfy an English language requirement and to learn U.S. civic matters. The second phase consisted of acquiring legal permanent residency. About 1.6 million from this group successfully completed the second phase.

10. See Sayan (2004) and Tuncay et al. (2005) for more studies related to Turkey.

11. For instance, in a study about Egypt Adams (1991) finds that about 54 percent of the remittance money that was spent on non-recurring items went into construction and repair of houses.

12. Remittances might also affect the real exchange rate via their differential impact on traded versus non-traded goods. For instance, if remittances are mainly spent on non-traded goods, increasing their price, there may eventually be an appreciation of the real exchange rate.

13. It is also important to note that the effect of remittances on the exchange rate is going to be influenced by the exchange rate regime (e.g. fixed or flexible) of the receiving country.

14. Some authors argue that while the effect of remittances on economic growth is not clear, remittances can reduce poverty levels. Adams and Page (2003) use data from a cross-section of countries and show that on average a 10 percent increase in

remittances as a share of GDP will lead to a 1.6 percent decrease in the percent of people living in poverty.

15. Taylor (1992), also using data for Mexico argues that remittances have a short term effect on inequality in addition to a long term effect through long term asset accumulation. In a study using survey data from Nicaragua, Barham and Boucher (1998) found that remittances do increase income inequality. Milanovic (1987) found similar results for Yugoslavia. For a theoretical treatment of the relationship between remittances and inequality see Quibria (1997).

16. Using data from Mexico, Hanson and Woodruff (2003) found that remittances and migration to the U.S. were both positively affecting the education of the children. The effect of migration was stronger for those households were the mother had lower levels of education.

References

Adams, Jr., R. (1991). The economic uses and impact of international remittances in rural Egypt. *Economic Development and Cultural Change, 39,* 695-722.

Adams, R. (2005). *Remittances, household expenditure and investment in Guatemala.* The World Bank Policy Research Working Paper Series 3532.

Adams, R., & Page, J. (2003). *International migration, remittances and poverty in developing countries.* World Bank Policy Research Working Paper Series 3179.

Agarwal, R., & Horowitz, A. (2002). Are international remittances altruism or insurance? Evidence from Guyana using multiple-migrant households. *World Development, 30*(11), 2033-2044.

Ahlburg, D., & Brown, R. (1999). Remittances in the South Pacific. *International Journal of Social Economics, 26*(1), 325-344.

Amuedo-Dorantes, C., & Pozo, S. (2004a). Worker's remittances and the real exchange rate: a paradox of gifts. *World Development, 32*(8), 1407-1417.

Amuedo-Dorantes, C., & Pozo. S. (2006a). Remittances as insurance: Evidence from Mexican immigrants. *Journal of Population Economics, 19*(2), 227-254.

Amuedo-Dorantes, C., & Pozo, S. (2006b). Migration, remittances and male and female employment patterns. *American Economic Review, 96*(2), 222-26.

Amuedo-Dorantes, C., & Pozo, S. (2006c). Remittance receipt and business ownership in the Dominican Republic. *World Economy, 29*(7), 939-56.

Amuedo-Dorantes, C., & Pozo, S. (2006d). *International migration, remittances and the education of children: The Dominican case.* Working Paper, Western Michigan University.

Amuedo-Dorantes, C., Pozo, S., & Vargas-Silva, C. (2007). *Remittances and the macroeconomy: The case of small island developing states.* UNU-WIDER Research Paper No. 2007/22.

Balderas, U., & Nath, H. (2008). Inflation and relative price variability in Mexico: The role of remittances. *Applied Economics Letters, 15*(3), 181-185.

Barham, B., & Boucher, S. (1998). Migration, remittances, and inequality: Estimating the net effects of migration on income distribution. *Journal of Development Economics, 55*(2), 307-331.

Blue, S. (2004). State policy, economic crisis, gender, and family ties: Determinants of family remittances to Cuba. *Economic Geography, 80*(1), 63-82.

Borraz, F. (2005). Assessing the impact of remittances on schooling: The Mexican experience. *Global Economy Journal, 5*(1), pp.1-9.

Bourdet, Y., & Falck, H. (2006). Emigrant's remittances and Dutch disease in Cape Verde. *International Economic Journal, 20*(3), 267-284.

Brown, R. (1997). Estimating remittance functions for Pacific Island migrants. *World Development, 25*(4), 613-626.

Brown, R. (1994). Migrants, remittances, savings and investment in the South Pacific. *International Labour Review, 133*(3), 347-367.

Chami, R., Fullenkamp, C., & Jahjah, S. (2005). *Are immigrant remittance flows a source of capital for development?* IMF Staff Papers, 52(1), 55-81.

Connell, J. (2000). Migration and remittances in island microstates; A comparative perspective on the South Pacific and the Caribbean. *International Journal of Urban and Regional Research, 24*(1), 52-78.

de la Briere, B., Sadouleth, E., de Janvry, A., & Lambert, S. (2002). The roles and destination, gender, and household composition in explaining remittances: An analysis for the Dominican Sierra. *Journal of Development Economics, 68*(2), 309-328.

Edwards, A., & Ureta, M. (2003). International migration, remittances, and schooling: Evidence from El Salvador. *Journal of Development Economics, 72*(2), 429-461.

El-Sakka, M., & McNabb, R. (1999). The macroeconomic determinants of migrant remittances. *World Development, 27*(8), 1493-1502.

Faini, R. (1994). Workers remittances and the real exchange rate: A quantitative framework. *Journal of Population Economics, 7*(2), 235-245.

Feiler, G. (1987). Scope and some effects of remittances of Egyptian working in the Arab oil-producing countries, 1973-1984. *Asian and African Studies, 21*(3), 305-325.

Funkhouser, E. (1995). Remittances from international migration: A comparison of El Salvador and Nicaragua. *The Review of Economics and Statistics, 77*(1), 137-146.

Giuliano, P., & Ruiz-Arranz, M. (2005). *Remittances, financial development, and growth.* International Monetary Fund Working Paper 05/234.

Glytsos, N. P. (2001). Dynamic effects of migrant remittances on growth: An econometric model with an application to Mediterranean countries. *Centre of Planning and Economic Research*, 1-38.

Gubert, F. (2002). Do migrants insure those who stay behind? Evidence from the Kayes Area (Western Mali). *Oxford Development Studies, 30*(3).

Hanson, G. H. (2005). *Emigration, labor supply, and earnings in Mexico.* NBER Working Papers 11412.

Hanson, G. H., & Woodruff, C. (2003) *Emigration and educational attainment in Mexico.* Working Paper, University of California at San Diego.

Higgins, M., Hysenbegasi, A., & Pozo, S. (2004). Exchange-rate uncertainty and workers' remittances. *Applied Financial Economics, 14*, 403-411.

Hoddinott, J. (1994). A model of migration and remittances applied to Western Kenya. *Oxford Economic Papers, 46*(3), 459-476.

Hoddinott, J. (1992). Modelling remittances flows in Kenya. *Journal of African Economies, 1*(2), 206-232.

Hysenbegasi, A., & Pozo, S. (2008) Workers' remittances and currency Crises. *Well-being and Social Policy Journal/Bienestar y Política Social*, forthcoming.

International Fund for Agricultural Development (2006). Retrieved from www.ifad.org/events/remittances/maps/asia.htm.

Inter-American Development Bank (2008). *IDB Estimates of 2008 Remittance Flows to Latin America and the Caribbean.* Retrieved March, 2009 from www.iadb.org/exr/remittances.

Katseli, L., & Glytsos, N. (1986). Theoretical and empirical determinants of international labour mobility: A Greek-German perspective. *Centre for Economic Policy Research Discussion Paper*, 148.

Lucas, R.. & Stark, O. (1985). Motivations to remit: Evidence from Bostwana. *The Journal of Political Economy, 93*(5), 901-918.

Merkle, L., & Zimmerman, K. (1992). Savings, remittances, and return migration. *Economic Letters, 38*(1), 77-81.

Milanovic, B. (1987). Remittances and income distribution. *Journal of Economic Studies, 14*(5), 24-37.

Mundaca, G. (2005). Can remittances enhance economic growth? The role of financial markets development. *Unpublished, Department of Economics*, University of Oslo, Oslo, Norway.

Nath, H., & Vargas-Silva, C. (2008). *Remittances and relative prices.* Working Paper, Sam Houston State University, Huntsville, TX.

Orozco, M. (2003). *Remittances, the rural sector, and policy options in Latin America USAID and BASIS Collaborative Research Support Program (CRSP).*

Osaki, K. (1999). Economic interactions of migrants and their households of origin: Are women more reliable supporters? *Asian and Pacific Migration Journal, 8*, 447-71.

Osili, U. O. (2004). Migrants and housing investments: Theory and evidence from Nigeria. *Economic Development and Cultural Change, 52*(4), 821-849.

Osili, U. O. (2007). Remittances and savings from international migration: Theory and evidence using a matched simple. *Journal of Development Economics, 83*, 446–465.

Pozo, S., & Vargas-Silva, C. (2008). Immigrant's remittances and the exchange rate. *Working Paper, (July 31).*

Quibria, M. G. (1997). International migration, remittances and income distribution in the source country: A synthesis. *Bulletin of Economic Research, 49*(1), 29-46.

Roache, S. K., & Gradzka, E. (2007). *Do remittances to Latin America depend on the U.S. business cycle?* IMF Working Paper WP/07/273.

Ruiz, I., Shukralla, E., & Vargas-Silva, C. (2009). Remittances, institutions and growth: A panel semi-parametric approach. *International Economic Journal, 23*(1), 111-119.

Sayan, S. (2004). Guest workers' remittances and output fluctuations in host and home countries. *Emerging Markets Finance and Trade, 40*(6), 68-81.

Stark, O., Taylor, E., & Yitzhaki, S. (1986). Remittances and inequality. *The Economic Journal, 96*(383), 722-740.

Straubhaar, T. (1986). The determinants of workers' remittances: The case of Turkey. *Weltwirtschaftliches Archiv, 122*(4), 728-740.

Swamy, G. (1981). *International migrant workers' remittances: Issues and prospects.* World Bank Staff Working Paper No. 481.

Taylor, E. (1992). Remittances and inequality reconsidered: Direct, indirect, and intertemporal effects. *Journal of Policy Modeling, 14*(2), 187-208.

Taylor, J. E., & Mora, J. (2006). *Does migration reshape expenditures in rural households? Evidence from Mexico.* World Bank Policy Research Working Paper 3842.

Tuncay Aydas, O., Neyapti, B., & Metzin-Ozcan, K. (2005). Determinants of workers remittances: The case of Turkey. *Emerging Markets Finance and Trade, 41*(3), 53-69.

United Nations. (2005). Retrieved December, 2005 from www.un.org.

VanWey, L. K. (2004). Altruistic and contractual remittances between male and female migrants and households in Thailand. *Demography, 41*(4), 739-756.

Vargas-Silva, C. (2009). Crime and remittance transfers. *Eastern Economic Journal, 35*(2), 232-247.

Vargas-Silva, C. (2008). Are remittances manna from heaven? A look at the business cycle properties of remittances. *The North American Journal of Economics and Finance, 19*(3), 290-303.

Vargas-Silva, C. (2009). The tale of three amigos: Remittances, exchange rates and money demand in Mexico. *Review of Development Economics, 13*(1), 1-14.

Vargas-Silva, C. & Huang, P. (2006). Macroeconomic determinants of workers' remittances: Host versus home country economic decisions. *Journal of International Trade and Economic Development, 15*(1), 81-99.

Wahba, J. (2004). Does international migration matter? A study of Egyptian return migrants. *Arab Migration in a Globalised World*, Geneva: International Organization for Migration.

Woodruff, C., & Zenteno, R. (2001). *Remittances and microenterprises in Mexico.* Working Paper, University of California San Diego.

Yang, D. (2008). International migration, human capital, and entrepreneurship: Evidence from Philippine migrants' exchange rate shocks. *The Economic Journal, 118*, 591-630.

Zarate-Hoyos, G. (2004). Consumption and remittances in migrant households: toward a productive use of remittances. *Contemporary Economic Policy, 22*(4), 555-565.

Biographical Sketches of Authors

Carlos Vargas-Silva is an Assistant Professor of economics at Sam Houston State University. One strand of his research examines the relationship between remittances and the macroeconomic variables of the remittance receiving countries. Another analyzes the impact of demographic factors on the amounts remitted. He holds a Bachelors degree and Masters degree from the University of Puerto Rico, as well as a Masters and Ph.D. from Western Michigan University.

Isabel Ruiz is an Assistant Professor of economics at Sam Houston State University. She has an special interest on Exchange Rates, Time-series Modeling of

Financial Data, Monetary Policy in Emerging Markets, International Capital Flows and Economic Development in Latin America. She holds a Bachelors degree from Universidad EAFIT in Colombia, as well as a Masters and Ph.D. from Western Michigan University.