DOES POLITICAL INSTABILITY AFFECT REMITTANCE FLOWS?

By

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Thesis

Submitted to the Faculty of the

Graduate School of Vanderbilt University

in partial fulfillment of the requirements

for the degree of

MASTER OF ARTS

in

Economics

May, 2006

Nashville, Tennessee

Approved:

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This thesis is dedicated to my family, my heart. All thanks to God for giving me my ever-loving, ever-sacrificing father, Dr. Gerald Y. Agbegha, and the four most beautiful, awesome siblings in the whole, wide world, Tamaraumieebi, Tamaraukontorukpa, Ebierewoubaumeri, and Enetimi.

ACKNOWLEDGMENTS

My deepest gratitude is first and foremost felt for my thesis advisor, Dr. Ana Regina Vides de Andrade, who introduced me not only to the proper methods of research in Economics, but also to the intriguing topic of remittances. I am thankful for all of her suggestions, constructive criticisms, patience, and encouragement.

I would also like to thank Mr. Kakhramon Yusupov for his help with my data collection and manipulation.

There is one person to whom I complained about every aspect of my thesis: my great friend Ms. Hanh Ho. I am so thankful for her kindness, good ears, and sense of humor, which kept me up when I needed to finish my work.

Finally, I thank my father and my siblings for being my inspiration. I would not have made it this far in my life or education without the support, example, and guidance of my father, and the love of my siblings. I am blessed.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

Remittances are the portion of earned income that migrant workers choose to send to the families they have left behind. Migrant workers may move to different regions in their own countries, or leave their countries of origin completely in order to earn more income. This paper will only consider international remittances, the income that migrant workers who have left their home countries send back to their family members. Over the past few years, remittances have begun to receive a great deal of attention, though people have been sending remittances for centuries. There are several reasons why remittances are receiving so much attention now: (1) they are becoming progressively easier to track and record; (2) it is cheaper and safer to send remittances now, so people do not fear sending remittances through official channels; (3) remittances are a large source of income for many nations around the world. For instance, in 1997, remittances accounted for 15.86% of Jamaica's national income (Amuedo-Dorantes & Pozo, 2004); (4) because of the expanding size of remittances, many policy makers and government officials desire to know how to use this income to develop their nations.

It is very difficult to ascertain the actual growth rate of remittances for most nations. The data available shows there has been a massive boom in remittance flows in the last two decades; however, these numbers could be misleading. Perhaps this giant increase in the figures simply means that migrants and remittance recipients are using official legal channels and reporting their transfers more than before. Haiti is an

excellent example of this "growth." Over the past twenty years, remittances to Haiti seemed to have multiplied by a factor of 8. However, this growth in income is hard to sustain unless the number of Haiti migrants have also multiplied by that much. Large remittances may point to a greater willingness of remitters and recipients to report or to send and receive the income through official channels. Though it is impossible to know the true growth of remittances, there is no doubt that remittances are flowing regularly and making a great impact on the recipient nations, as will be seen in Chapter III, the data description.

What determines flow of remittances? Studies on this topic argue that remittances are determined by the income level of the host and the receiving country, the interest rate differentials in the two nations, and the black market and official exchange rate differentials (El-Sakka & McNabb 1999). There are also other factors such as the length of stay of the migrant worker also impact remittance flows through official channels (Poirine 1997). However, the biggest impact comes from the income differential (El-Sakka & McNabb 1999). Economists have offered four main hypotheses on the motivations behind sending family remittances to the country of origin: altruism, co-insurance, implicit family loan, and self-interest (Poirine 1997; Chami et al 2003; El-Sakka & McNabb 1999).

A large number of researchers have studied remittances at the microeconomic level. One such study is summarized in "Are International Remittances Altruism or Insurance? Evidence from Guyana Using Multiple-Migrant Households" (Agarwal & Horowitz, 2002). There is another body of research examining remittances at the macroeconomic level. Some examples are the El-Sakka and McNabb (1999) article, the

Chami et al article (2003), and Elbadawi and Rocha (1992). This study will use a macroeconomic approach to determine the behavior of remitters from Latin America.

At the macro level, there are some researchers suggesting that political instability deters economic growth (Fosu, 2004). One avenue that has not yet been fully or even casually explored by economists is whether remittances are affected by political instability. David Fielding (2003) wrote an article on the effect that political instability had on investment and employment in Northern Ireland, a country that has been experiencing terrible political turmoil for several decades. He found that political instability there reduced productivity, and therefore labor and investment due to attacks on property as well as the increased uncertainty about the returns to investment. In fact, many other economists have discussed the impact of political instability on investment as well as labor, such as A.K. Fosu (2002, 2004). This paper will make a first attempt at determining whether political instability in the receiving country has any effect on the flow of remittances. PolityIV is a measure of political stability.

This thesis would help to further determine the behavior of remittances, i.e. whether they are subject to the same tendencies and shocks as other types of investments. If increasing political instability deters the amount of remittances a country receives, all other things being constant, then altruism might not be the true motivation behind remittances. This thesis will test this relationship to see whether political instability negatively impacts remittances. If it is true that some governments around the world are becoming dependent on remittance flows as a source of foreign exchange, it is important to know whether political instability will affect the inflow.

This thesis will do a macro-level analysis using aggregated data such as real per capita gross domestic product, real interest rates, and remittance flows. The main source of data comes from the World Bank's World Development Indicators website. The time period for the data is from 1970 to 2003. The real GDP and interest rate data pertaining to 26 Sub-Saharan African nations as well as 21 Latin American and Caribbean nations will be used along with the real GDPs and interest rates from the U.S. and some European nations, which will be the host country data (see Appendix B for list of recipient countries). Measures of political instability data come from the PolityIV dataset, which is available on the Internet from the Integrated Network for Societal Conflict Research Program (INSCR) in the Center for International Development and Conflict Management (CIDCM) at the University of Maryland. A panel estimation of the data will be carried out.

CHAPTER II

LITERATURE REVIEW

Many economists have attempted to describe the trends in remittance flows; however, they diverged in many aspects: perspective (macro- or microeconomic), methodology, region of study (one country, one continent/region, or the globe), the four main motivations for sending remittances, and their findings. The results are disparate and rather confusing, though the debate has continued for over thirty years, perhaps even to the time of John Maynard Keynes.

In a 1999 article, M.I.T. El-Sakka and Robert McNabb attempted to find the macroeconomic determinants of remittances. The authors desired to discover the macroeconomic determinants of remittances because remittances to developing nations are a major source of foreign currency, which is essential for economic development programs and stabilization policies. Because governments attempt to harness the remittances into useful avenues for development it would be useful to know the key variables affecting remittances at the macroeconomic level. They used aggregated data from Egypt from 1967 to 1991. The authors chose to study Egypt's case because of its status as a major exporter of migrant workers during that period. Remittance flows were a considerable source of foreign exchange; according to Wahba's study (1991) remittances accounted for 41% of Egyptian exports of goods and services. The Egyptian government had therefore made efforts to increase the remittance flows through formal channels by not taxing interest accrued on officially held deposits of foreign currency and

by issuing bonds in foreign exchange denominations to Egyptians living in other countries.

The authors discussed the many ways that inflation could affect the flow of remittances. High rates of inflation in the home country could cause increased migration due to the fact that real income would be unstable in the home country. High rates of inflation would then cause migrant workers to remit more. However, the authors also noted that if inflation depreciated the domestic currency, then there would be less pressure for migrants to remit more foreign currency. This claim seems counterintuitive, since a depreciated currency would lead to decline in purchasing power. Most importantly, some economists believe that high inflation is a substitute for uncertainty and risk, reducing the flow of remittances.

El-Sakka and McNabb also stated that remittances might be dependent on the allocation decisions for investment projects. If this is true, then the decision of how much to remit would be based on whether the domestic rates of return are or not competitive, i.e. if they are low compared to the host country's then migrants will not remit. In nations where there is a black market, the authors suggest that migrant workers will have to choose whether to remit through official channels or the black market based on the difference between the official and black market exchange rates. Also, if remittances are to be taxed, then migrant workers will also send their earnings through unofficial channels.

El-Sakka and McNabb estimated a model where flows of remittances were explained by migrant worker's wages, level of domestic income, domestic price level, the domestic and world interest rates, and the official and black market exchange rates.

Other factors not measured in this estimation, such as changes in household size, education, and other factors are included in the error term. The average of the real per capita GDPs of the main Arab host countries was used as the wage available to migrant workers in Egypt. The rate of return on foreign assets would be calculated as the average of interest rates in the receiving country. The black market exchange rate was taken from Picks Currency Yearbook. The other data were obtained from the Egyptian government.

El-Sakka and McNabb estimated an Ordinary Least Square regression where the economic activity of the host country, as represented by the wages available to the migrant worker, has a positive and significant impact on the amount of remittances sent. The domestic GDP also positively affected the flow of remittances in both its current and lagged forms, but not significantly.   Both nations' GDPs are important because host countries set limits on how many immigrants can enter the country based on the economic activity of the home country, and the amount of income migrant workers would be able to receive in the host country would determine how much the migrant workers would save for themselves and then choose to send home. When the level of domestic income was dropped from the equation, the magnitude of the other variables increased, suggesting that Egyptians did not use remittances principally for consumption, but perhaps for purchasing assets instead. Though the authors did not elaborate on this idea, perhaps they meant that the differentials for the variables tied closely to investment mattered more to remitters than Egypt's income level, suggesting that the remitters were not sending money to be consumed, but to be invested.

Remittance flows were discovered to be very sensitive to the difference between official and black market exchange rates in a negative way. Migrants proved to transfer

their remittances through the black market, though there was risk attached, when the difference was large because of the additional return and due to the fact that a high black market interest rate is linked to erratic macroeconomic policy. The difference between domestic and foreign interest rates also had a negative and significant impact on remittances sent through official means. Migrants tended to save their money or invest it elsewhere when the domestic interest rate was too high. The level of domestic inflation also had a significant and positive effect on the size of remittances, reflecting perhaps a desire to augment family income. The authors used an autoregressive procedure to take into account serial correlation.

The elasticity for the black market differential was large and significant. The same was true for the interest rate differential. These results implied that Egyptians were using their money for investment reasons. The coefficient for domestic inflation was positive and significant, suggesting that migrants sent back more money during high inflation times, and that migrants are more likely to send their money through official channels in times of inflationary pressures in order to ensure that the money goes to where it was intended to go.

These results imply that in the case of Egypt between 1967 and 1991, altruism and self-interest were both important motivations for remittances. The results suggest that in order for governments to take advantage of remittances, the domestic interest and exchange rates must be competitive. The inclusion of the black market variable indicates possible macroeconomic irregularities that must be ameliorated. "Unrealistic" interest and exchange rates cause migrant workers not to send the money home, to divert it into the black market, or to invest it in what they believe will offer a higher return.

Mandatory plans that attempt to use remittance flows are found to cause migrants to send income through unofficial channels to escape legal actions. The state must still try to utilize remittances for economic development through investment; however, new policies for remittances must work well with existing policies.

In a 2003 International Monetary Fund (IMF) Working Paper titled "Are Immigrant Remittance Flows a Source of Capital for Development?" Ralph Chami, Connel Fullenkamp, and Samir Janjah developed a model for the determinants and effects of remittance flows, including both microeconomic and macroeconomic variables. They noted that most of the literature on remittances focused either on the cause or the effects, or focused on either macroeconomic or microeconomic perspectives, but not all of them simultaneously. They desired to create an easily modifiable model of remittances that incorporated both macroeconomic and microeconomic variables. They did a panel estimation involving 113 countries from all over the world from 1970 to 1998. The authors concluded that remittances had a negative impact on economic growth and did not act as a source of capital for economic development.

The authors made three basic assumptions: the motivation for remittances is altruism, and remittances are compensatory and counter-cyclical; family members who do not emigrate participate in the domestic labor market and the receipt of remittances affects the decision to work and therefore the amount of remittances needed; and there is a moral hazard because remitters are so far away from those receiving the remittances. The recipients may decide to work less because of the income from abroad. Consequently, remittances might promote negative economic growth. This argument

assumes that w/o remittances the receiving country would be able to generate employment and productive jobs for migrants.

Chami et al (2003) used a mathematical model to show how output would decrease if remittances were received. However, since the main concern of this thesis is not on output, this mathematical model is not described in detail. Some important aspects of Chami's model useful to this thesis is that the authors assumed that wages offered in the host country should be higher than those in the recipient country, echoing the research results of El-Sakka and McNabb (1999). The authors posited that a migrant worker's motivation for sending remittances was altruism. This altruism would cause a migrant worker to send money home to maximize his utility by sending money to maximize the recipient's utility. Based on their derivations, Chami et al (2003) found that remittances are compensatory and they expected to find a negative relationship between the amount of remittances sent and the income level of the person receiving remittances.

Chami et al utilized the World Bank's World Development Indicators database to get data on remittances for 113 countries (African, Asian, and European) from 1970 to 1998. Although they had a large set of countries, many of the countries included did not have a large number of observations (less than 50 nations had more than 10 observations), and the data was not continuous. Most countries' observations did not start until the mid 1980s. The authors found their data on GDP per capita from the Penn World table. The other economic data was taken from the World Economic Outlook.

In their model, economic growth (measured by log of real GDP per capita) was explained via the initial value of real GDP per capita, investment (as GDP ratio), and ratio of remittances to GDP. Another variable that the authors used is the ratio of net

private capital flows to GDP (*npcf*), which is a dummy variable, which is widely used in growth economic models to control for size of investment that comes from abroad. The authors ran this regression and variations of it and found that there was a robust negative relationship between the growth rate of remittances and GDP per capita. Another item of interest was that remittances to low growth nations were usually higher, and that high remittances within countries were linked to lower growth.

The authors pointed out an endogeneity problem: the causes of remittances are also affected by remittances. To address this problem, Chami et al. used an instrumental variable estimation where the growth rate of remittances was estimated as a function of instrumental variables (the real income differential between the host and recipient nation and the real interest rate differential), which had to be correlated to with remittance growth but not with the error term. Remittances were estimated based on lagged measures of output where remittances are estimated via the differences in output levels between the host and the recipient countries and their corresponding interest rates). They then used the growth rate of GDP per capita as a dependent variable, and fitted remittance growth rate as the independent variable.

The authors found that remittances were compensatory, motivated by altruism, and counter-cyclical. Remittances were not like private capital flows and were a reductive force for GDP. The authors found that it would be very difficult to use remittances for economic development because of their nature as altruistic gifts rather than investments, or if remittances were considered a repayment of an implicit family loan. Governments would have to persuade senders and recipients to invest rather than consume. The moral hazard involved with remittances would also be another hurdle to

11

overcome. Also, because remittances are a source of foreign exchange, losing these

remittances would cause havoc with these countries' exchange rates and their domestic

economies as well. Governments could end up depending too heavily on remittances as

cushioning for bad economic times.

The authors' conclusions seem to in a way contradict the findings of El-Sakka and

McNabb, who showed that remittances might be altruistic (for consumption) as well as

self-serving (for investment). This contradiction may be because Chami et al were

studying an aggregate of 113 countries rather than just Egypt. Another issue of concern

is that the authors used the real GDP per capita of the U.S. as the income level in the host

country. This step is problematic because not all migrants in the 113 countries emigrate

to the U.S. Many go to host countries in their own regions, and these host countries will

surely not have the same income level as the U.S. unless one considers some countries of

Western Europe and Japan. The two groups of economists did agree somewhat on the

macroeconomic determinants of remittances. Chami et al only excluded the real and

black market exchange rates, but there is still a high goodness of fit (0.87). Finally, the

authors themselves admitted that all their theories about how moral hazard affects the

recipient's output, and therefore the migrant's remittances, were just that - theories. They

have no empirical evidence to show that any of their mathematical manipulations have

any basis.

Research by many economists and political scientists shows that political

instability is very important for economic performance. As mentioned before, political

instability can lead to a decrease in productivity, a decrease in the number of laborers, a

decline in investment, and therefore a depression of economic growth and development. Literature shows that the greatest factor affecting remittance flows is the differential between the income levels in the host and receiving countries (El-Sakka & McNabb, 1999; Chami et al, 2003; Wahba, 1991). There is a body of research that points out that political instability affects economic growth, and consequently the income level. However, the link between remittance flows and political instability has not been explored, though it would seem that logically, political instability would have some effect on remittances through a decrease in economic growth, if not also by other means. The following articles discuss how political instability has affected economic growth in different regions of the world.

Matthieu Bussière and Christian Mulder authored "Political Instability and Economic Vulnerability" in 2000. In their article they tested whether political instability affects economic vulnerability in the case of the crises of Mexico in 1994 and Korea 1997. Mexico's economic crisis came about after a presidential election, and Korea's occurred before its elections.

The number of coups was not included in this analysis under the belief that coups were no longer relevant given that these countries have elected governments. They based this position on a previous study by Ul-Haque, Mark, and Mathieson's 1998 study, which found that including variables such as assassinations, strikes or riots, government crises, or anti government manifestations were significant but did not contribute to the economic variables. Bussière and Mulder chose countries that had similar, democratic processes: elections every four to six years and presidential or parliamentary governments. They

constructed three political variables that measure political polarization (measured by effective number of parties and coalitions), cohesion, and volatility. They also controlled for election dates where governments attempt to cover up for important economic problems before elections. All election dates had equal weight.

Bussière and Mulder tried to control for reverse causality by using data that was known at the beginning of both crisis periods. In their model, the severity of the crisis is explained by the exchange rate level, the lending boom (percent increase in loans provided by the banking system over the past four years, which is a stand-in for the strength of the bank system), and reserves levels. The assumption was that higher lending results in greater the number of bad loans.

According to their main findings, the effective number of parties and the number of coalitions were not significant, while volatility and election dates were highly significant. The authors proposed that the number of political parties might not be a good substitute for polarization and that the number of parties in a coalition does not necessarily show the strength of a coalition. The volatility index was significant and robust. When included in the regression with all the other political variables it was significant at the 10% level, and its significance increased along with the R^2 value when it was tested alone. Volatility also passed tests for robustness. The election variables also impacted economic stability significantly. Two dummy variables were used for election periods. The authors found that economic vulnerability increased after an election was held.

The authors found that the lending boom (the percent increase in loans provided by the banking system over the past four years) contributed more to the crisis than the

political volatility index did, and that political variables did not determine the extent of a crisis, but improved the explaining power of the regression when combined with economic variables. Countries with solid economic fundamentals were not affected by election periods whereas countries that were not as sound, which the authors identified by high lending boom values, low reserves, and "overhauled exchange rates," faced higher economic vulnerability. The inclusion of political variables was therefore found to be very beneficial to explaining power of the regression. The authors also found that the unstable period for nations is after elections, not before. They found that holding an election led to a 40% increase in the crisis index.

In the 2003 article "The Political Economy of Growth in Latin America and East Asia: Some Empirical Evidence," Ludovic Comeau, Jr. studied the history of Latin American and East Asian economic conditions along with their sociopolitical and institutional environments to determine whether a relationship exists between them and what kind of relationship it is. Using the data from 1972 to 1989 in 13 Latin American countries (Mexico, Costa Rica, Honduras, Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Venezuela, Uruguay) and 8 East Asian countries (Indonesia, Japan, South Korea, Malaysia, Philippines, Singapore, Taiwan, and Thailand), Comeau found that sociopolitical instability had a negative effect on economic growth.

Though their economic policies were very similar after the second World War with such strategies as import-substituting industrialization (ISI), which gave tax advantages and preferential appropriation of resources to domestic firms, the East Asian nations were able to move away from that ISI system and move to the export-lead growth

model, ensuring their GDP growth in the past decades. The ISI was designed to protect

the newly created firms in these developing nations; however, because these industries

were shielded from competition from the global market, they became inefficient. There

were negative effects for exports as well, and the states that engaged in this behavior for a

long period were unable to obtain their comparative advantage in the world market. The

effective way to use ISI was for a short period until the infant industries were out of their

first development stages and then to remake policies so that these industries could

compete in the world market. East Asian countries made the change, while Latin

American and African countries did not. Comeau called this change at the opportune

time "strategy switch-points."

Latin American and East Asian nations began to try to make policy reforms in the

late 1950s that would decrease protection of domestic industries and increase the

exportation of "nontraditional" goods. The difference between the two regions was that

Latin American countries still did not encourage exporting as much as East Asia, and

there was a great deal of political instability, erratic policymaking, and lack of agreement

in society about changing to a more open economy. One main reason for this resistance

to change was that labor unions were more influential in Latin America than in East Asia.

The author found that East Asia was able to keep its macroeconomic conditions

more stable than Latin America. In East Asia, people were living better and income

inequality decreased. There was a high and rather constant rate of growth in productivity

in manufacturing, and inflation of wages and process were for the most part controllable.

Latin America, on the other hand had high inflation rates that shook confidence in

business and Latin America nurtured the highest income inequality rates in the world.

All of these factors led to the failure of Latin American nations to successfully maneuver themselves through the strategy switch-point.

The oil shocks of the 1970s were also events that caused Latin American economies to fare worse than they had before due to policy mistakes. After the 1973 oil shock, East Asian nations brought about short-term policies to stabilize prices and to restrict the monetary supply. These actions kept wages and real consumption stable, and spurred household saving. Latin American nations did not try to stabilize their money supplies or price levels, leading to high inflation and deficits in the current accounts.

Comeau noted that it had been suggested that the reason East Asian nations were doing better than Latin American nations, though they both shared similar policy objectives in the 1970s and 1980s, is that East Asia lacked many natural resources and so was able to avoid Dutch disease effects. Some economists offered differences in cultural heritage or traits up as a reason why East Asian nations have surpassed Latin American ones. Others raised the fact that many Asian nations were offered foreign aid during the Cold War so they would not become communist as a reason for their success. This aid would have allowed them to develop faster, supposedly, than Latin America. However, Comeau was dubious of these claims. Dutch disease is a product not simply of having abundance of natural resources, but also of bad policies. The cultural argument has been used as a both a positive and negative variable that would explain growth in Asia, so it is not a sound reason. Lastly, the way aid money is implemented is just as important as the amount of money given.

Still more economists have tried to determine whether the type of government impacts economic growth, whether it is democracy or any other type. Political stability

has also found a place in the literature for determining economic growth. Some researchers find that it has little effect on economic growth while others find evidence of just the opposite. Many economists have proposed that there are positive correlations between economic and political freedoms and economic growth. Comeau, however, put forward the following view: that there is a nonlinear relationship between democracy and growth "whereby there is a relative erosion of the growth potential at high levels of political freedom," and that political stability and "initial democratic capital" have a positive effect on economic growth.

Unstable political conditions create uncertainty and cause investors to worry about whether they should invest their capital. People cannot form rational expectations because of the unpredictable nature of the economy. The cost of capital increases, and investors invest their capital in other more stable nations. Workers also leave the country because of volatile social environments and because as investors leave the country, there is no longer as high a demand for labor. The country then loses most of its skilled laborers, since they would be able to successfully integrate into another country with better living conditions. Output would then decrease due to the drop in productivity, and because the workers that have left are usually the most educated, the nation cannot engage in research and development, leading to a drop in technological advances. Comeau used an augmented neoclassical growth model to show the impact of political economy on growth. Using data from 1972 to 1989, he estimates economic growth as determined by investment in physical capital, quality of labor input, the extent of sociopolitical instability, external debt the nation had as a percentage of GDP, region (measured by a dummy variable, taking the value of one for Latin American nations, and

0 for East Asian nations), inflation, government spending, and economic freedom. Gastil

created a measure of political instability, measuring how democratic the nation is in that

particular year, it goes from 0 to 1, where 1 shows high instability and 0 is for low

instability. Quality of labor input was measured as the percentage of the population that

attained higher education – college or beyond (Barro and Lee 1993). The index of

economic freedom, was taken for Gwartney et al 1996; this index goes from 1 to 10

based on 17 criteria, 1 is the least democratic).

On average, the Latin American nations studied were found to have higher mean

and maximum values in terms of inflation, government size, debt, political rights, and

political instability. Investment, economic freedom, and education, were higher in East

Asia. At the starting point, Latin American nations were better off than East Asian

countries. By the end of the period, the East Asians had outstripped the Latin American

nations by a great deal.

The results of the regression suggested that countries that experienced high

instability would have a 1.34% lower average growth rate than politically stable

countries, ceteris paribus. The poor performance of the *CONTINENT* variable showed

that though instability is important in affecting growth, being in one region does not

affect the political stability of a country one way or the other. Adding *EDUCATION* in

linear and then quadratic form increased the explaining power of the model from 0.79 to

0.86 (with EDUCATION) and then 0.89 (with *EDUCATION*^{2}). These results showed a

nonlinear relationship between growth and human capital accumulation, and when

CONTINENT was added to the equation at this point, it became significant and negatively

impacted GDP growth.

East Asia's GDP growth rate was almost 3% higher than Latin America's. Growth in Latin America was shown to be lower than East Asia due to low levels of education and high levels of political instability. Inflation and debt were also associated with low growth, and were found to be more powerful than political instability; as the model expanded the coefficient for UNSTABLE decreased. Unstable countries had about 6% less investment than stable ones in this study. Latin America as a whole had 7.2% less investment than East Asia. The authors remarked that most of the variables were linked to one another, so they checked for endogeneity problems. The authors tested for endogeneity between political instability and external debt and found that there was no correlation between the two. On the other hand, instability and inflation were found to be highly correlated and to "obstruct the momentum of the economy in a context of high foreign indebtedness."

The author found that instability is the byproduct of bad policies. Policymakers in Latin America did not seem to a very good job at maintaining low inflation and debt, increasing economic freedoms, and increasing productivity through education, or human capital accumulation. The ability to formulate and execute effective policies helped East Asian nations to achieve economic growth. Political stability was another important factor in their growth.

"Mapping Growth into Economic Development: Has Elite Political Instability Mattered in Sub-Saharan Africa?" was written by Augustin Fosu (2004). He found that elite political instability negatively impacted the "mapping" of GDP growth into economic development. He defined political instability as the incidents of coups d'état.

Economic growth was defined as GDP growth. Economic development was defined as an improvement in the quality of life from Todaro (1994).

For his study, Fosu used data from 29 Sub-Saharan African nations from 1970 to 1985. According to Fosu, there had been 60 successful coups, 70 abortive coups, and 125 reported coups in Sub-Saharan Africa between 1958 and 1985. The purpose of his study was to determine if these coups were harmful to economic development.

The author uses an expanded growth model where economic growth is explained by h, which is human development, which includes health and adult literacy, and y is GDP. The model was then expanded to $h = a_1 + a_2y + u$, with a_1 as the intercept, a_2 as the transformation of y into h, and u as the error term. Fosu claimed that institutional features of a country affect h. For example, a militaristic government or a dictatorship government could affect h. In these systems, resources are more likely to be given to the elites, who will keep the leaders in power. Fosu then used the following model to represent this relationship: $a_2 = t(p) = b_1 + b_2*p$, where p measures the political instability an t is the coefficient of transformation. The author then combined these models together to form this final model: $h = c_1 + c_2*y + c_3py + c_4p + v$. Variable c_2 replaces b_1; c_3 replaces b_2; and c_4 is the independent impact of p on h.

Fosu used the change in the United Nations' human development index (HDI) as a measure of h. This index takes into account adult literacy, life expectancy, the log of the purchasing power of GDP per capita for each nation. The lower limit of this index is 0, i.e. when a nation has extreme "deprivation." Some economists have claimed that this index is redundant because all of the variables are significantly and positively correlated with the HDI. However, Fosu argued that there was a lower degree of correlation for low

growth nations like those in Sub-Saharan Africa. The mean annual growth rate of GDP

was used as a measure of y. This data was taken from the World Bank. Labor growth (l),

gross domestic investment (k), and exports (x) were used as instrumental variables. The

data for these variables were also taken from the World Bank. The variable p was the

principal component of the frequencies of successful coups d'etat, abortive coups, and

coup plots. Fosu based his measurements on the 1986 McGowan study. Fosu believed,

however that different coups had different impacts on h. He believed abortive coups had

the biggest impact.

 The results of the regression showed that the largest impact occurred when the

successful coup variable was used interactively with y. The coefficient was negative and

significant at the 1% level. The goodness of fit was higher. Successful coups were

powerful agents in reducing the transformation of y into h, economy growth into

economic development. The greater the occurrence of successful coups, the larger the

misallocation of resources to the elite to keep the new government in power. Though

economic growth had the biggest impact on economic or human development, a coup

could decrease economic development by 10%.

 Fosu concluded that elite political instability slows the rate at which GDP growth

is transformed into economic development. Political instability also affected economic

growth, and so there was an indirect effect of political instability on development. Fosu

proposed that a solution to elite political instability would therefore improve economic

growth and development.

CHAPTER III

METHODOLOGY & DATA DESCRIPTION

This thesis will adopt the method used by El-Sakka and McNabb (1999) to test

whether political instability has an effect on remittance flows. The model will contain

the real interest rates for the recipient and host countries as well as the real income per

capita of the receiving and host nations and an index of political stability from the

PolityIV dataset. The black market and real exchange rates will not be used because they

are more difficult to find than the other data. It is suspected that the goodness of fit will

increase for the model with political instability as an explanatory variable. A panel

estimation of 47 countries will be used to determine the relationship between remittances

and political instability.

The model that will be used follows:

log remittances = a_1 + a_2 log (GDP_h) + a_3 log(GDP_d) + a_4 log(r_d-r_h)) + $a_5$polity2.

Remittances is real remittances per capita. The variables GDP_h and GDP_d stand for the

host country's real GDP per capita and the recipient country's real GDP per capita,

respectively. The term (r_d-r_h) stands for the real interest rate differential between the

receiving nation and the rest of the world. The variable polity2 stands for the political

stability index. There will be some variations on this model. Income and interest rate

values will be lagged in some models. The political instability variable will also be

lagged in some models.

Though endogeneity issues are a real concern in the model, they will not be addressed in this thesis. The issue could be a topic for later research.

It is expected that the sign for the estimate a_2 will be positive, since an increase in the GDP per capita of the host country would imply that migrant workers would have more to remit (by also increasing migration to host country). The sign of a_3 is not easy to predict because it depends on the motivations for sending remittances, which is what this study indirectly tests for. If the motivation for sending remittances is altruism or an implicit family loan, then it is expected that the sign for a_3 will be negative so that as the income level in the receiving rises, migrant workers send less. If the motivation for sending remittances is co-insurance or self-interest, then as income in the receiving country increases, remittances will actually increase. The coefficient for the political instability variable is expected to be negative, but once again depends on the motivations for sending remittances.

This study used aggregated data from 47 African, Latin American and Caribbean countries. Eleven of these nations had discontinuous data. There were countries for which the remittance data seems to be rounded up or down. All 47 nations had at least ten observations over the 1970 to 2003 period. Twenty-six African nations and 21 Latin American and Caribbean nations were represented in this study. The remittance, income, and consumer price index, which was used to calculate the real interest rate, comes from the World Bank's World Development Indicators Online web page. The nominal interest rates were taken from International Finance Statistics.

Political stability was measured by using the Polity2 variable (from the PolityIV dataset) measuring the political behavior of each nation. Polity2 ranks nations annually from –10 to 10 based on how democratic or autocratic they are. However, in years when there are coups or other political interruptions, the PolityIV system gives the nation a number code based on whether it is under foreign domination, experiencing transition, or interregnum. Polity2 changes these codes to regular polity values. Polity data is available for all of the 47 countries from 1970 to 2003.

The following tables and graphs are meant to create a better, visual understanding of the amount of remittances received each year by each recipient nation and the economic impact of remittances on those economies. All economic values are real values, not nominal. The political instability of recipient nations is also described.

Table 1 Remittances by recipient Countries (1970-2003)
Latin America and the Caribbean (in millions real U.S. $)

Country	# of observations	sum	mean	std. dev.	maximum	minimum	remit/rgdp
Argentina*	22	1510	68.64	61.22	253	15	0%
Belize	20	380	19.00	3.08	24	13	2%
Bolivia	28	875	31.25	47.36	135	1	1%
Brazil	29	27874	961.17	1056.41	3320	29	0%
Colombia	34	20189	593.79	745.82	3080	22	3%
Costa Rica	27	1689	62.56	87.94	321	2	2%
Dominican Republic	34	19828	583.18	689.74	2330	15	11%
Ecuador*	18	9815	516.58	573.87	1550	1	9%
El Salvador	28	18833	672.61	683.85	2120	11	15%
Guatemala*	26	8361	321.58	504.51	2150	1	10%
Guyana*	15	240	16.00	19.21	64	1	9%
Haiti	33	5799	175.73	207.02	811	18	21%
Honduras	30	4122	137.40	222.88	867	1	13%
Jamaica	28	11188	399.57	399.75	1400	69	17%
Mexico	25	106297	4251.88	3514.67	14600	177	2%
Nicaragua*	15	2390	159.33	155.79	439	4	10%
Panama	27	2391	88.56	25.85	136	16	1%
Paraguay	29	3202	110.41	110.87	299	6	3%
Peru	14	7422	530.14	242.74	860	87	1%
Trinidad & Tobago*	28	530	18.93	23.25	79	1	1%
Venezuela*	15	143	9.53	8.43	21	1	0%

* Indicates discontinuous data

Table 1 partially describes the remittance flows to 21 Latin American and Caribbean nations considered in this study. Sums of remittances over the years from 1970 to 2003 have been calculated. It should be no surprise that Mexico's sum is the largest over $106 billion. However, these sum figures can be misleading as some nations did not have all 34 years' worth of data while some others started data inclusion at the end of 1970s or early 1980s, some nations are missing many years of data. Countries with discontinuous remittance data are marked above.

Perhaps a better indicator of remittance flows to these nations is the mean of remittances over the 1970-2003 time period. Mexico once again stands out as the leader

due, no doubt due to its very near proximity to the U.S. Mexico's mean remittance flow

is, for example, ten times greater than Jamaica's and Guatemala's. However, a note of

caution should be provided as these are not per capita figures. These figures are meant to

give a better understanding of just how much money is being sent home by immigrant

workers and indicative of the large number of workers living outside their original

countries. The standard deviation values for all of these nations' remittance flows are

quite large, perhaps showing just how much remittance flows have increased in the past

three decades. However, these fluctuations could be explained by other factors. This

thesis argues that part of this large increase in remittances is related to the political

instability of the country.

The last column in the table shows the portion of each nation's real GDP that was

due to remittances in the year 2003 only. Haiti, El Salvador, Honduras, and the

Dominican Republic all had rather high ratios of remittance flows to GDP (10% or

more), showing how the economies of these countries were highly dependent on

remittance flows. The ratio of remittances to GDP in Argentina, Panama, and Brazil was

very small, conversely. These small values may have been due to misreporting, the

distance these nations are away from the U.S., or the relatively large size of their

economies.

Table 2 Data Description for Remittance-receiving Countries (1970-2003)
Sub-Saharan Africa

| Country	# of observations	sum	mean	std. dev.	maximum	minimum	remit/rgdp
Benin	30	2112	70.40	29.97	136	7	3%
Botswana	29	1576	54.34	18.95	94	26	0%
Burkina Faso	30	3028	100.93	43.94	192	36	2%
Cameroon	25	402	16.08	7.99	33	3	0%
Rep. Congo*	13	67	5.15	4.00	12	1	0%
Cote d'Ivoire*	28	1881	67.18	50.86	151	12	1%
Ethiopia	27	482	17.21	12.14	53	4	1%
The Gambia	29	396	13.66	10.62	40	1	9%
Ghana	25	393	15.72	17.48	65	1	1%
Guinea-Bissau*	11	60	5.45	6.68	18	1	9%
Kenya	34	5080.42	149.42	167.65	538	7.26	5%
Lesotho	29	8604	296.69	96.94	455	122	19%
Malawi	10	10	1.00	0.00	1	1	0%
Mali	29	2219	76.52	34.53	138	18	5%
Mauritius	10	1758	175.80	33.67	215	118	4%
Mozambique	24	1374	57.25	10.83	75	37	1%
Namibia	14	176	12.57	2.71	16	8	0%
Niger	30	292	9.73	3.68	18	4	0%
Nigeria	27	14518	537.70	697.69	1870	2	3%
Rwanda*	23	115	5.00	3.94	21	1	0%
Senegal	30	3867	128.90	86.84	344	9	7%
South Africa	34	3883	114.21	111.34	436	15	0%
Sudan	27	9053	335.30	303.80	1220	40	8%
Swaziland	30	1826	60.87	32.86	113	4	4%
Togo	30	698	23.27	25.15	103	4	7%
Zimbabwe	17	204	12.00	13.53	44	1	n/a

* Indicates discontinuous data

Table 2 shows the remittance flows for the 26 Sub-Saharan African nations, showing a different pattern than the one seen in the Latin American and Caribbean countries. First, the amount of remittances sent back by migrant workers appears smaller in Sub-Saharan Africa than in the other region. Nigeria's total of remittances over the 34 year period is the highest in the region; however, it is only 10% of what Mexico received in the same period according to the WDI data. The other African nations in this study are nowhere close. This pattern may be due to the fact that money sent to Sub-Saharan African countries is not sent through official channels. This pattern could also possibly

highlight a difference in giving patterns between Latin American and Sub-Saharan African migrant workers. The standard deviation values for Sub-Saharan Africa seem lower than those for Latin America, signaling less fluctuation over time within each country. This observation is actually quite surprising, considering all of political, health, religious, and cultural disasters of the last decades endured by Sub-Sahara countries. Out of the 26 nations, only 10 have standard deviations higher than $100 million, whereas the Latin American and Caribbean region had 13 out of the 21 nations with standard deviations of over $100 million. The ratios of remittances to GDP are over 10% for eight out of the 21 Latin America and the Caribbean countries; while in Sub-Saharan Africa only one country, Lesotho passed the 10% level.
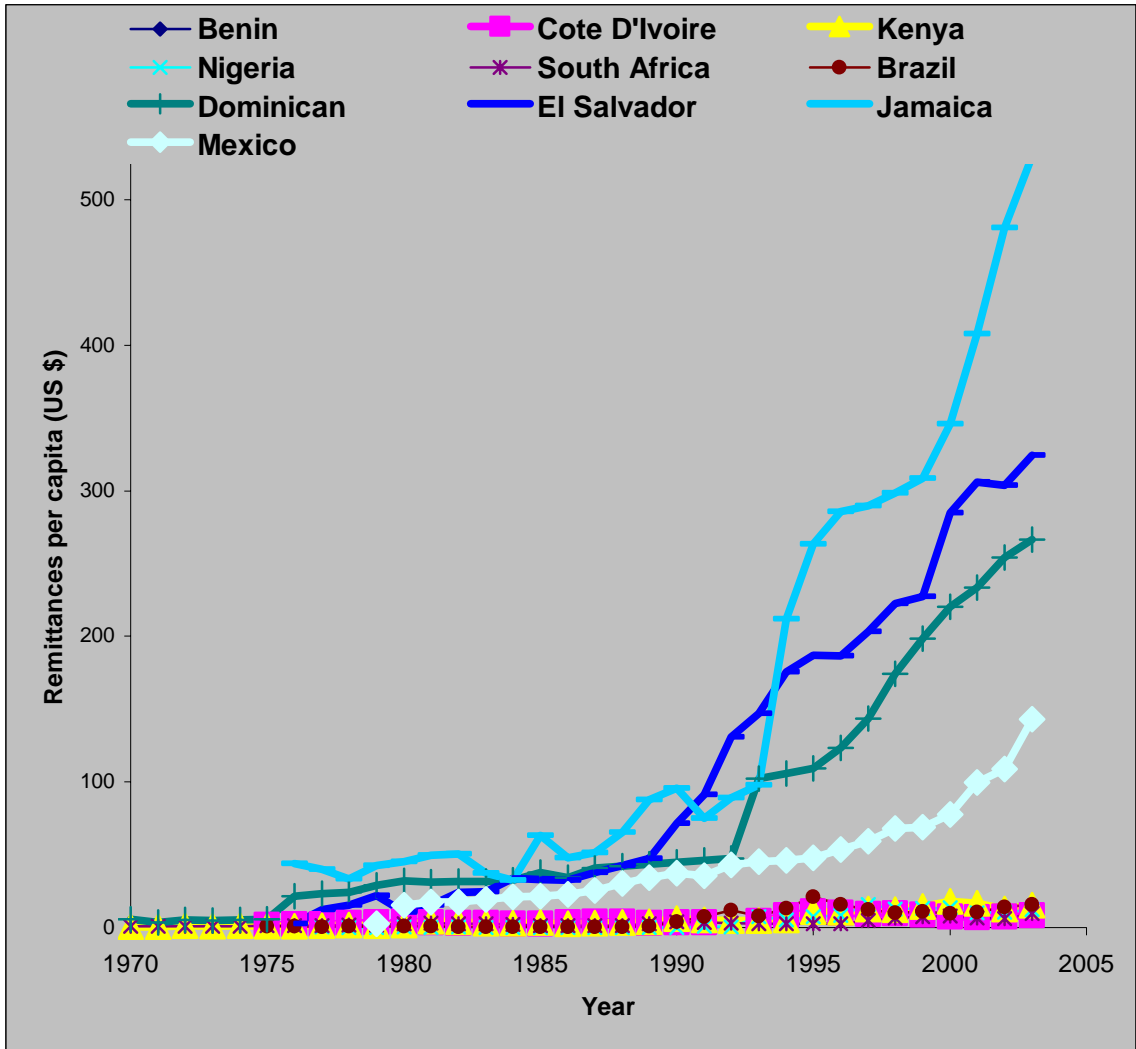
Figure 1 Remittance Flows for Selected Countries (1970-2003)

Figure 1 shows the difference between the per-capita remittances sent to some

Sub-Saharan African, Latin American, and Caribbean countries. It is clear from this

graph that in per capita terms, immigrants from Latin America and the Caribbean are

sending more money home through official means than those from Sub-Saharan Africa.

An important qualification to make, however, is that these are the official numbers.

Perhaps the systems to properly account for the income sent to Sub-Saharan Africa have

not been developed to the extent that they have been in Latin America and the Caribbean.

30
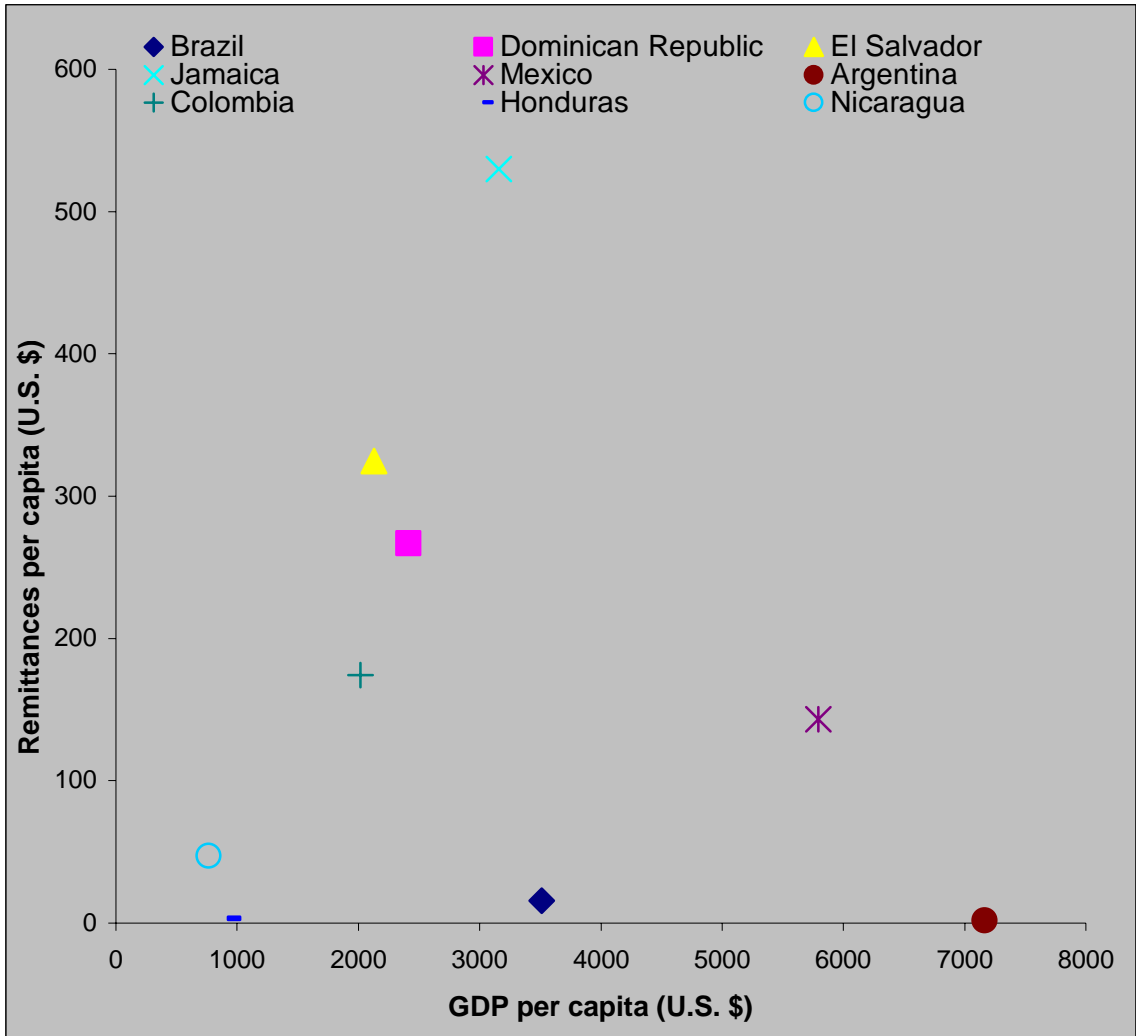
Figure 2 Remittance Flows Per Capita vs. GDP Per Capita in 2003
Selected Latin American and Caribbean Countries

Figure 2 shows the per capita remittance flows of four Latin American nations

and Jamaica related to their own per capita economic growth rate. Unfortunately, there

does not seem to be a pattern between the nations' GDPs per capita and their per-capita

remittance flows. For example, Brazil's GDP per capita was very close to Jamaica's, but

Jamaica's remittances per capita were many times higher than Brazil's. There are

however, some countries showing a linear correlation between per-capita income and per-

capita remittances, if we could draw a diagonal line from the origin in a 45° degree, countries like El Salvador, Dominican Republican, Nicaragua and Columbia would be very close to the line.
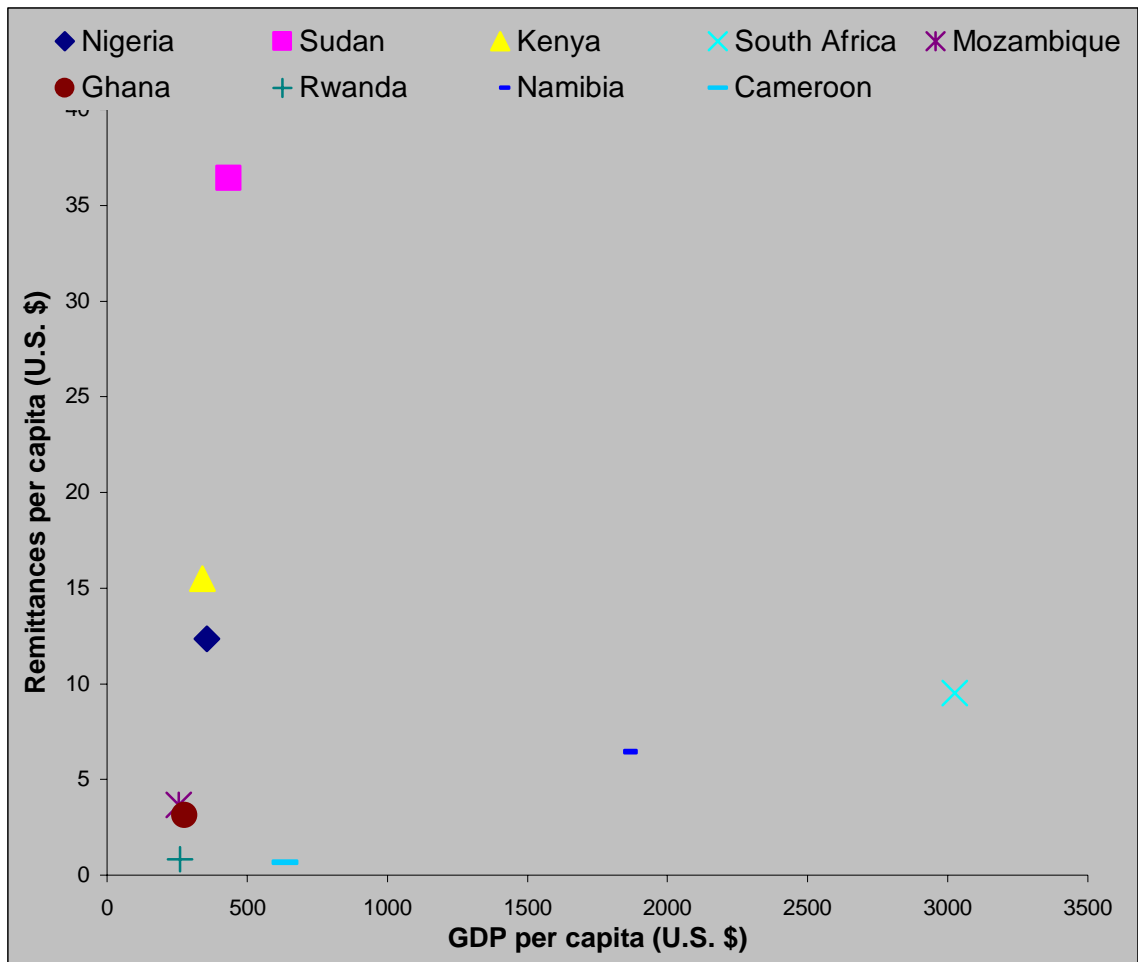
Figure 3 Remittance Flows Per Capita vs. GDP Per Capita in 2003
Selected Sub-Saharan African Countries

Figure 3 shows again the per capita remittance flows related to own per capita GDP of nine Sub-Saharan countries. The important information to take away from this graph is that remittances per capita for the African nations were a great deal lower compared to the Latin American and Caribbean nations. The maximum remittances per

capita for Sub-Saharan Africa is less than $40, while in the Latin American graph, the

highest was almost $600 per capita. There are many factors that would influence this

discrepancy. Perhaps the most powerful factor is distance between the host and recipient

country and the channels used by migrant workers sending remittances.

Table 3 Democratic Index of 21 Latin American and Caribbean Nations (1970-2003)

Country	Average Polity2	Std. Dev.
Argentina	3	7
Bolivia	3	7
Brazil	2	7
Chile	1	7
Colombia	8	1
Costa Rica	10	0
Dominican Republic	4	4
Ecuador	5	6
El Salvador	3	4
Guatemala	1	5
Haiti	-5	6
Honduras	4	3
Jamaica	10	0
Mexico	0	5
Nicaragua	0	7
Panama	0	8
Paraguay	-2	7
Peru	2	6
Trinidad	9	1
Uruguay	3	8
Venezuela	8	1

Table 3 shows some of the distributional characteristics of the Polity2 data.

Polity2 measures the democracy degree of each country, higher positive values indicate

more democratic societies. There was a large amount of variation within the region.

Negative values for the average Polity2 variable indicate that the nation is not

democratic. Haiti and Paraguay were examples of this. Others had highly democratic

governments for the greater part of the 34 years, such as Venezuela, Trinidad, Costa Rica,

and, surprisingly, Colombia. Most of the nations in this list have had a great deal of

variation in the 34 year period. Uruguay, Panama, Paraguay, Nicaragua, Chile, Brazil,

Bolivia, and Argentina were examples of those with large a great deal of change in their

political environments over the time period of this study.

Table 4 Democratic Index of 26 Sub-Saharan African Nations (1970-2003)

Country	Average	Std. Dev.
Benin	-2	6
Botswana	8	1
Burkina Faso	-4	3
Cameroon	-7	2
Republic of Congo	-5	4
Ethiopia	-4	4
Gambia	4	6
Ghana	-2	5
Guinea-Bissau	-4	5
Ivory Coast	-7	4
Kenya	-5	4
Lesotho	-3	7
Malawi	-4	7
Mali	-2	6
Mauritius	10	0
Mozambique	-3	7
Namibia	-2	7
Niger	-3	6
Nigeria	-3	6
Rwanda	-6	1
Senegal	-1	4
South Africa	6	2
Sudan	-5	4
Swaziland	-9	3
Togo	-5	2
Zimbabwe	-1	5

Table 4 shows a marked difference in the political environments in Sub-Saharan

Africa from Latin America and the Caribbean. Most of the nations listed above have an

average Polity2 index that is negative, meaning that the governments were for the most

part very undemocratic. The standard deviations are also high, showing that instability

was high in the region.

CHAPTER IV

MODEL ESTIMATION

The empirical analysis that follows is based on annual country data from 1970 to 2003. The data was taken from the World Development Indicators Online as well as International Financial Statistics. The dependent variable for both regions (Latin America and the Caribbean and Sub-Saharan Africa) was remittances per capita in real U.S. dollars. This was the value of all remittances that went to each country through official channels divided by the population of the country for each year.

The income per capita disparity between recipient and host country was one of the control variables in explaining worker's remittances. This thesis used two different host countries. The United States was used as a benchmark for Latin America and the Caribbean countries since most of their migrants went to the U.S. To choose one unique host country for the Sub-Saharan Africa was more complicated since it is farther away from the U.S. and because many of the countries still had economic ties to many of their former colonial rulers. Using the GDP per capita of the U.S. would have been highly inaccurate as many African immigrants do not actually go to the U.S. Consequently, data from "International Migration Trends: 1960-2005," which was published by the UN was used to create a weighted average of the GDPs per capita of the nations that most African immigrants would go to (Population Division/DESA, 2005). According to the publication, the U.S. accepted the most immigrants (35 million) in 2000, then Russia, Germany (7.5 million), Ukraine, India, France (6.5), Canada (6 million), and so on.

Russia, Ukraine, and India were immediately ruled out because of the language barrier. A weighted average of the GDPs per capita of the remaining countries was calculated based on how many immigrants they accepted per year starting in 2000. The GDPs per capita of all nations was taken from the World Development Indicators Online.

There were difficulties in obtaining interest rates from the WDI Online, i.e. there were many incomplete data, so the interests were retrieved from the International Financial Statistics. The interest rate used was the discount rate. The real interest rate was calculated using the consumer price index for each of the nations in each year. Though official and black market exchange rates were used in the El-Sakka and McNabb model of remittances, due to the difficulty of obtaining them for all of the nations included, the exchange rates were dropped from the model.

The political stability data was taken from the PolityIV dataset, which was edited by Monty G. Marshall and Keith Jaggers. The Polity project is now the most widely used source for monitoring political regime changes. It incorporates 161 countries, including all of the nations chosen for this study. The PolityIV data series is an improvement on the last three because it introduces a new variable, polity2, which makes it easier for the polity regime measurements to be used in time-series analyses. Polity2 can vary in value from -10 to 10 depending on the autocratic or democratic nature of the government, respectively. A very negative score would mean that the government is an autocracy, which does not allow political competition and does not take care to give its citizens political rights. A positive score indicates a relatively democratic government which allows for fair elections and political freedoms for its citizens. The polity2 variable is the variable that will stand for political (in)stability in this model.

The equations for Latin America and the Caribbean and Sub-Saharan Africa were estimated by Panel Estimation. The results are shown in Table 5 and Table 6, respectively.

Table 5 Results of Panel Estimation of Macroeconomic and Political Determinants of Remittances to Latin America and the Caribbean (1970-2003)

Dependent Variable: Log Remittances per Capita					
	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	-65.43	-67.58	-77.34	-79.31	-77.12
	(-17.02)***	(-16.77)***	(-17.56)***	(-17.32)***	(-16.26)***
Log GDP per capita (Recipient)	-1.79	-	-0.39	-	-
	(-3.20)***		(-0.60)		
Lagged Log GDP per capita (Recipient)	-	-1.97	-	-0.63	-0.40
		(-3.41)***		(-0.91)	(-0.58)
Log GDP per capita (Host)	7.95	-	8.07	-	-
	(15.44)***		(14.36)***		
Lagged Log GDP per capita (Host)	-	8.30	-	8.45	8.04
		(15.75)***		(14.13)***	(13.74)***
Log Interest Rate Differential (Recipient-Host)	-0.02	-	-0.04	-	-
	(-0.37)		(-0.68)		
Lagged Log Interest Rate Differential (Recipient-Host)	-	-0.05	-	-0.04	-0.04
		(-0.89)		(-0.77)	(-0.63)
Polity2 (Recipient)	-	-	-0.05	-0.04	-
			(-2.92)***	(-2.34)**	
Lagged Polity2 (Recipient)	-	-	-	-	-0.02
					(-0.89)
Number of observations	273	261	252	240	240
Number of Countries	21	21	20	20	20
Adjusted R2	0.16	0.15	0.29	0.29	0.30
F-value	119.69	119.44	101.20	100.82	97.68
Prob>F	0	0	0	0	0

Numbers in parentheses are the t-values for each variable
* Significant at the 10% level
** Significant at the 5% level
*** Significant at the 1% level

Models 1 and 2 in Table 5 show the results of the panel estimation including only the macroeconomic determinants of remittances to Latin American and Caribbean nations. The coefficient for the GDP per capita of the recipient country was negative and statistically significant at the 1% level, which differs from the findings of other economists who have determined that remittances are not significantly affected by the GDP per capita of the receiving country (El-Sakka & McNabb, Chami et al). Models 1 and 2 show that an increase in the GDP per capita of the receiving nation has a depressive effect on remittances to Latin American and Caribbean nations, on average. The coefficient for the GDP per capita of the host country, the U.S., is positive and statistically significant at the 1% level, reinforcing what other economic researchers had found – that the wages available to an immigrant in the host country have a great impact on the amount he can send home. The higher the earning possibilities, the more income is likely to be sent home. The interest rate differential was also found to be statistically significant, as the previous literature on remittances showed. Model 2 indicates that it may take some time for remitters to gauge the impact of changes in the economic conditions of both the host and recipient nations. The coefficients for the income variable were higher in magnitude while continuing to be statistically significant. The coefficient for the interest rate differential was positive and significant, though El-Sakka and McNabb found that it should be negative and significant. This difference in direction of the size could come from the fact that two important variables (official and black market exchange rates) were excluded from the model. The overall or adjusted R^2 value was only 0.13 for both models, meaning that only 13 percent of the variation in remittances is accounted for by the variation in the independent variables; however, the F

values were very high for models 1 and 2, indicating that the results were statistically meaningful, and the coefficients were significant.

Model 3 shows the result of the introduction of the Polity2 variable into the regression. The coefficient of GDP per capita in the recipient country became smaller and not statistically significant. The other economic independent variables remained statistically significant at the 1% level and became larger in magnitude. The coefficient for the newly introduced Polity2 variable was negative and significant at the 1% level. A unit increase in the Polity2 variable was shown to cause a 6% decrease in the amount of remittances sent to the receiving country. A unit increase in the Polity2 variable would mean that the recipient nation is becoming more democratic. This coefficient shows that as political conditions in the recipient nation improve, immigrants from that nation send less money home. Therefore, in the case of Latin America and the Caribbean, remittances appear to be sent for altruistic purposes.

Model 4 shows the result of lagging all of the independent variables. The R^2 dropped slightly, and the number of observations decreased due to the lagging of the variables. The coefficients also changed, but only slightly. The interest rate differential, GDP per capita in the host country, and the Polity2 variable remained statistically significant at the 1% level.

Model 5 explained the variation of remittances the best of all the models. When GDP per capita and the interest differential of both the recipient and host countries were lagged, while the Polity2 variable remained in its present form, the size of the effect of GDP per capita for the host and polity2 increased. This result implies that remitters make

judgments of what to give based on past economic conditions and real-time political

conditions.

Table 6 Results of Panel Estimation of Macroeconomic and Political Determinants of Remittances to Sub-Saharan Africa (1970-2003)

Dependent Variable: Log Remittances per Capita					
	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	-17.47	-22.18	-17.27	-22.31	-22.89
	(-3.91)***	(-4.99)***	(-3.68)***	(-4.86)***	(-4.99)***
Log GDP per capita (Recipient)	0.14	-	0.14	-	-
	(0.36)		(0.36)		
Lagged Log GDP per capita (Recipient)	-	0.61	-	0.61	0.60
		(1.52)		(1.51)	(1.50)
Log GDP per capita (Host)	1.79	-	1.77	-	-
	(4.97)***		(4.57)***		
Lagged Log GDP per capita (Host)	-	1.97	-	1.99	2.05
		(5.62)***		(5.32)***	(5.52)***
Log Interest Rate Differential (Recipient-Host)	0.01	-	0.01	-	-
	(0.14)		(0.13)		
Lagged Log Interest Rate Differential (Recipient-Host)	-	-0.00	-	-0.00	-0.00
		(-0.07)		(-0.06)	(-0.03)
Polity2 (Recipient)	-	-	0.00	-0.00	-
			(0.14)	(-0.11)	
Lagged Polity2 (Recipient)	-	-	-	-	-0.01
					(-4.99)***
Number of observations	301	283	301	283	283
Number of Countries	25	25	25	25	25
Adjusted R2	0.09	0.17	0.10	0.17	0.17
F-value	12.55	16.05	9.39	11.99	12.11
Prob>F	0	0	0	0	0

Numbers in parentheses are the t-values for each coefficient.
* Significant at the 10% level
** Significant at the 5% level
*** Significant at the 1% level

The panel estimation for the Sub-Saharan African nations shows different results from those of Latin America and the Caribbean. The first two models show the effect that GDP per capita of the host and recipient nations and the interest rate differentials have on the flow of remittances. Though all of the variables are significant in this model, as they were for Latin America and the Caribbean, the R^2 value for Sub-Saharan Africa was a great deal smaller. The F value, however, remained very high. The coefficient for the GDP per capita for the host is almost five times higher in Latin America than it is for Sub-Saharan Africa. However, the coefficient for the interest rate differential is three times higher for the Sub-Saharan African nations than for the Latin American and Caribbean nations, and it remains positive. El-Sakka and McNabb point to the negative coefficient for the interest rate differential in their model as a sign that higher interest rates in the recipient nation deter remittance sending. However, in the estimations for Latin America and the Caribbean as well as for Africa, the coefficient is positive. This finding would suggest that on the whole, remitters are sending portions of their income for altruistic reasons. Otherwise, high interest rates would discourage them, since they usually are synonymous with inflation and risk. There are many reasons why these differences could exist. The interest rates taken from the IFS database were a great deal higher for Sub-Saharan Africa than for Latin America, so the effect of interest rates would be higher. The fact that a weighted average of the GDPs per capita of the U.S., Germany, France, and Canada was used deflated the income available to immigrants from Sub-Saharan Africa compared to those in the other group. Lastly, the constant term in these two models is less negative than those in the Latin American models. The

constant terms for Sub-Saharan Africa look more similar to those from El-Sakka and McNabb's findings.

When the Polity2 variable was added to the regression in Model 3, it was shown to be significant at the 5% level, but the size of the coefficient was only 0.02, meaning that a unit increase in Polity2 would only produce a 2% increase in remittances. This finding nonetheless shows that there is a difference in the sending patterns of immigrants from Sub-Saharan Africa than from those from Latin America.

When all of the independent variables were lagged in Model 4, the polity2 variable became even smaller and not statistically significant. The same was true for Model 5, where all of the independent variables were lagged except polity2. So, Sub-Saharan African immigrants as a whole do not take into account the economic and political conditions of the past to make their current judgments about remittances. These results indicate that Sub-Saharan African immigrants may not consider political instability at all when deciding what portion of their income they should send home.

CHAPTER V

CONCLUSION & POLICY IMPLICATIONS

This paper, by adding the political stability variable, has shown that there are different patterns to remittance-sending by immigrants from Sub-Saharan Africa compared to those from Latin America and the Caribbean. It was determined that while an increase in democratic characteristics of government by a Latin American or Caribbean nation engendered a decrease in remittances sent home, the same increase in a Sub-Saharan African nation had no effect on remittance flows. The results for Latin America and the Caribbean point to immigrants' altruism as the reason for sending remittances, while the results for Sub-Saharan Africa are inconclusive.

There were many problems with the data. For many of the Sub-Saharan African nations, the remittance and GDP per capita data were missing for several years, if not entirely, so only twenty-six of the forty-eight Sub-Saharan African nations were used. The same was true for Latin America and the Caribbean, although to a much lesser extent. Thus, a great deal of variation could have been excluded simply because the data was not collected. This problem highlights another problem: there was a dearth in data collection in many of these African nations because of political unrest. The Democratic Republic of Congo could not be included in this study, for example, because the civil war there had made data collection impossible for several years. Eritrea, created out of a civil war in Ethiopia in 1993, also could not be included for lack of data. The list continues. The reason that the results for Sub-Saharan Africa seem inconclusive may not be because

immigrants from there do not take political instability into account. It could actually be that those nations that were not included would have had a large effect, but their exclusion caused these results.

Another problem with the data is that the data available to graduate students may not be as much as the data available to professional researchers. It was very difficult to find immigration data for the Sub-Saharan African region. The author also did not have access to the real interest rates of all of the nations included, and so had to proceed with the estimations using the discount rates from the International Financial Statistics database. Two very important independent variables (the official and black market exchange rates) had to be excluded. All of these issues could have affected the regression results and their interpretation.

Finally, the polity2 variable does not capture all instability. The polity2 variable only reflects the changes that happen within the government, not necessarily the outside changes that could affect the government. Colombia, for example, has one of the most stable polity2 averages out of the countries used in this study. Nevertheless, no one would deny that there is instability in that country. Political and criminal violence were not captured in this model. Further research could be done in this area.

The methodology of this paper also had some problems. All remittance researchers point to the fact that exchange rates, interest rates, and income affect the flow of remittances. However, they also acknowledge that remittances affect exchange rates and income. Therefore there is a serious endogeneity problem. However, that was not within the scope of this paper to solve. The endogeneity problem could be the topic of

another paper, as no one to the author's knowledge has actually definitively solved the problem.

The inflation variable that was omitted from this model due to expectations of a multicollinearity problem was added in a follow-up panel estimation for the Latin American and Caribbean region. The addition of the inflation variable changed the sign of the coefficient of the interest rate differential to negative, and the interest rate differential as well as the inflation were not statistically significant. The coefficients for the real GDPs per capita and polity2 remained significant and comparable to those in the model used in this thesis. When the simple model used by Chami et al (2003) was used to estimate remittance flows, the coefficient for the income differential was statistically significant, as it was in the Chami et al model. The interest rate differential was not statistically significant, which echoed the Chami model as well. Addition of the polity2 variable caused a slight increase in the adjusted R^2, and the polity2 variable was statistically significant and negative, just as it was in the model used in this thesis. This model for the macroeconomic determinants of remittances had the highest R^2 value of all models tested. All of these different results from the different panel estimation models suggest that there are many ways to estimate remittances.

This paper highlights an important issue for policymakers. The results of this study contravene the results of the studies done by El-Sakka and McNabb as well as Chami et al when the interest rate differential is considered. Instead of high interest rates deterring the flow of remittances into the recipient nations, they actually have a positive effect. The results show that policymakers should not place too much emphasis on

47

keeping interest rates low, as far as remittances are concerned, although for the sake of GDP growth and economic stability, they should.

Though this thesis has shown that remittances increase as nations become less democratic in Latin America and the Caribbean, the data and literature on political instability show that instability has a negative impact on the economy as a whole. It is in the best interest of all nations to promote peaceful, stable, free, and democratic governmental environments to foster economic growth and welfare for their citizens.

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