

A Comparative Analysis of Development: Foreign Direct Investment and Remittances in Latin America

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Abstract

Economic growth in developing countries has long been thought to come from a variety of different economic factors. One of the most prevalent theories has been providing a country with high levels of foreign direct investment, encouraging the country to industrialize. Whilst there are obviously many other factors either inhibiting or encouraging a developing country's growth, foreign direct investment has long been seen as the prime inflow of capital. However, in recent years, there has been a rapid increase in the transfer of funds to developing countries from migrant workers through remittances. This study explores the aggregate impact remittances have had on economic growth and compares that to the impact of FDI on five Latin American countries, using panel data from five Latin American countries spanning from 1990-2009.

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1.0 Introduction

Economic growth in the developing world has been a major topic of discussion for the past few decades. Much of the discussion has revolved around determining what factors lead to significant growth and development within a developing country. There has been a rise in different growth models within the field of economics, but certain factors have been accepted as universally prevalent. For example, the classic Solow growth model emphasizes the necessity of technological innovation to spur economic growth. Throughout the later part of the 20th century, different models came to surface throughout the economic world. A neo-liberal approach dominated rhetoric in the 1980's, placing an emphasis on the free market and transferring economic control from the public sector to the private sector. While there currently are different specific theories as to what the best road to growth involves, it is generally accepted that accumulation of capital is a driving force behind each of them. International capital flows provide the means for capital accumulation in developing countries. However, there are different avenues for these flows to exist, ranging from foreign direct investment to international foreign aid. Recently, remittances have become increasingly important in terms of international capital flows.

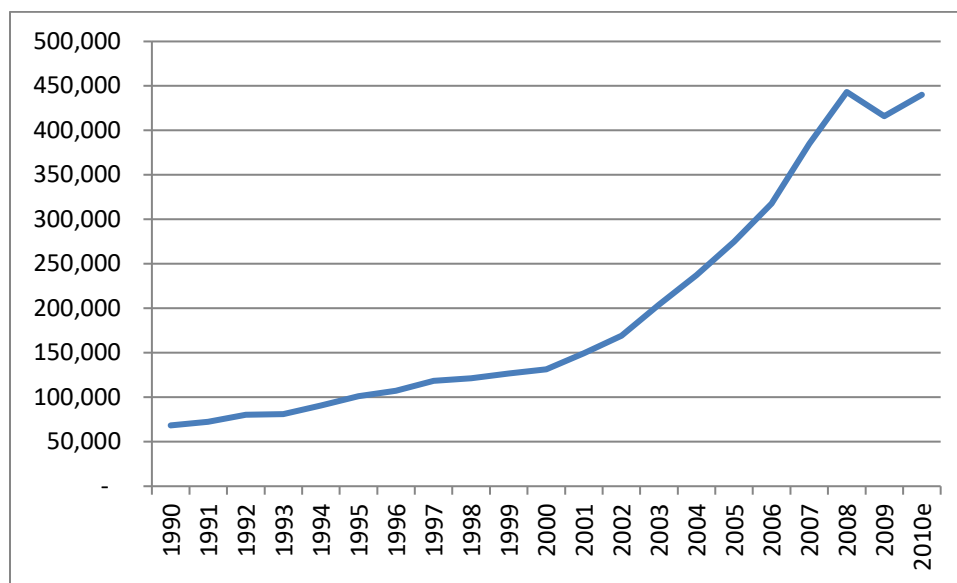
This study will attempt to analyze the effectiveness of different capital flows by comparing the effect the FDI and remittances have on growth and development in Latin America. This study is important because of the changing dynamic in the Latin American world, as migration becomes a larger issue, propelling remittances into a role they had never been in. Comparing the effectiveness of the two factors will lead to a better competence of growth in the region, ultimately allowing for more effective policies to be put into place.

While many studies analyze the effects of FDI and remittances on growth individually, this paper expands upon previous research by comparing the two simultaneously. Since economic development is not always fully explained by simple measures of economic growth, this paper also analyzes the effects these two factors have on development by using poverty statistics as a proxy.

2.0 Trend

Over the past few decades, remittances have become increasingly important in the realm of international capital flows. According to World Bank estimates, around \$2 billion were sent to developing countries from migrant workers in 1970. By 1990, that number had grown to \$31.1 billion and estimates put the 2010 total at \$440 billion. Figure 1 shows total worldwide remittance inflows from 1990-2009, the time period this paper will be analyzing.

Figure 1: Worldwide Remittance Inflows

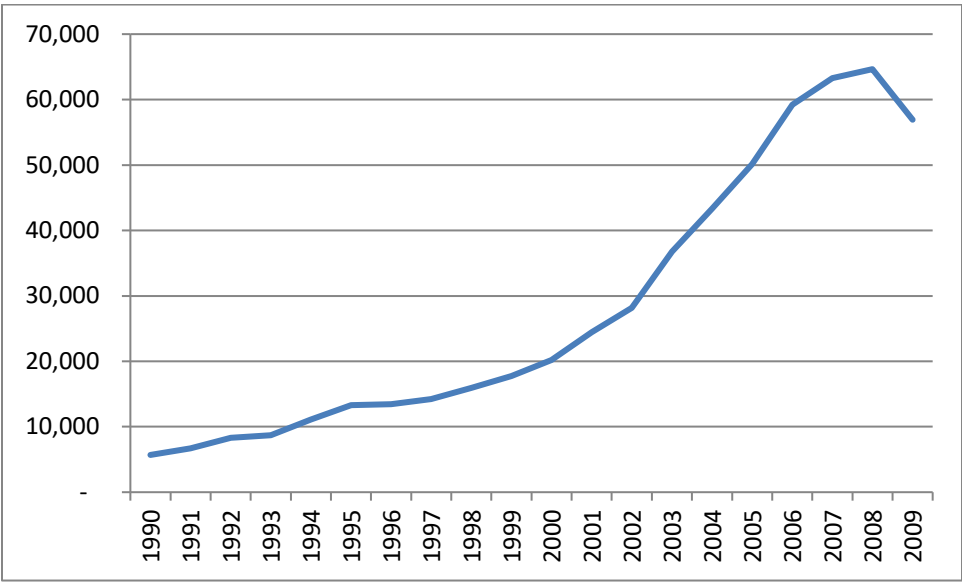


Source: World Bank Data

Figure 1 clearly shows the rapid growth that this form of capital flow has undergone, with the only decrease in inflows coming between 2008 and 2009, a clear result of the worldwide economic crisis. Figure 2 then focuses these numbers solely on Latin America.

Besides a downturn over the past few years mainly attributed to the financial crisis, remittance inflows have steadily risen both at the worldwide level and solely in Latin America.

Figure 2: Remittance Inflows to Latin America

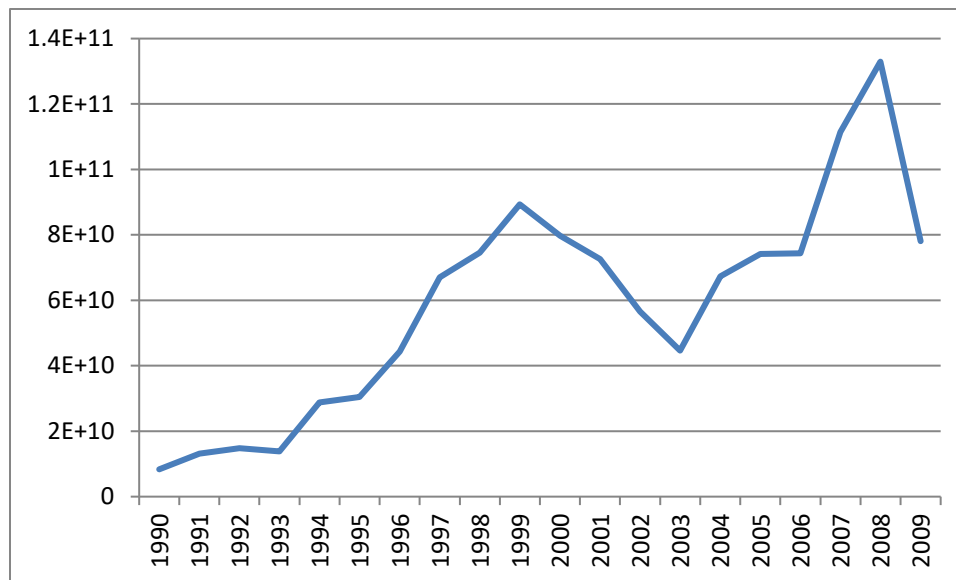


Source: World Bank Data

It is important to note that due to the nature of the transfer, many experts agree that official numbers concerning remittances may not tell the entire story. Due to the fact that many remittances could go unaccounted for, some experts estimate that the totals could be up to 50% higher than officially reported. (Pradhan, Upadhyay and Upadhyaya 2008) This potential flaw in accountability must be taken into account later when analyzing potential outcomes.

While remittances have steadily risen over the past few decades, foreign direct investment into the region has experienced a different, more fluctuating path, as evidenced by Figure 3.

Figure 3: FDI Inflows to Latin America and the Caribbean



Source: World Bank Data

In the late part of the 1990s and into the early part of the 2000s, FDI inflows into Latin America fell sharply. Some of this could be attributed to stronger economies in the region, such as Brazil, who see a growth in their individual FDI outflows. However, FDI inflow is extremely sensitive to global macroeconomic conditions. After experiencing a period of rapid growth throughout the latter half of the past decade, figures were drastically affected by the financial crisis, falling to levels in 2009 not seen since a decade earlier. Comparing this to the earlier information on remittances, we see that FDI is more greatly affected by economic conditions as remittance levels in 2009 only fell to 2007 levels.

3.0 Literature Review

As previously stated, there is much research into the field of economic development in developing countries and the determining factors of that growth. However, there are varying

views on the actual effect that remittances may have on economic growth in developing countries. In many developing countries there is a lack of access to credit markets, proving to be an obstacle for investment and growth of small business. Proponents of remittances see them as a means of providing capital for such projects in the absence of credit markets. However, there are also different arguments determining that remittances can actually be detrimental to economic growth. People who adhere to this school of thought claim that remittances are mainly used in day to day personal consumption and do not contribute to overall economic growth. There is also empirical evidence claiming that remittances have a negative impact on the labor supply in a given country (Ruiz et al., 2009).

However, there are studies that show a positive correlation between remittances and growth. Fayissa and Nsiah (2010) do find a significant and positive correlation between the two when analyzing remittances and other accepted factors of growth such as foreign aid and a country's openness to trade.

In lieu of the critique that remittances are primarily used for day to day personal consumption, therefore having a minimal effect on growth, Mundaca (2009) notes the link between effective remittances and a higher degree of financial market development. She finds that remittances can enhance growth if markets are developed, providing an avenue for the money to be invested in long run technology or capital investment. However, it must also be noted that a growing financial market system can be one of the staples for economic growth, regardless of whether remittances are a factor or not. That being said, when it comes to the effectiveness of remittances, a more developed financial market allows for the monies to stray away from simple day to day consumption and tend to be used in more growth driven investments.

Rivero (2007) analyzes the effect that foreign direct investment has on economic growth. He finds a positive relationship between the two variables. Fayissa and Nsiah (2010) reiterate Rivero's findings in regards to foreign direct investment, finding a positive correlation to economic growth as well. However, they also find that other official inflows (excluding foreign direct investment) and international aid each have a negative effect on growth. Rivero (2007) refers to the idea that economic growth does not always translate to improved standards of living for a particular country's population. There are many economic reasons why this is so, most easily quantified if a country experiences a large income gap between the wealthy and poor. Rivero (2007) analyzes the effect that foreign direct investment has on other factors outside of growth that are often overlooked. He finds that FDI has a positive effect on both government tax revenues as well as employment rates in receiving countries. This is important to analyze since the welfare of the country's population is the most important factor in growth for developing countries. Oftentimes, simple measures like GDP growth do not always translate to sustained development.

3.0 Methodology and Data

3.1 Data

Since this study analyzes two separate regression models, it is important to discuss the data method that is used in each. When analyzing the effects on economic growth using the first model, annual data is used from 1990 through 2009. The data is taken from the World Bank's World Economic Development Indicators series. Summary statistics for the first model are provided in Table 1.

Because the purpose of this paper is to analyze the and compare the effects that foreign direct investment and remittances have on both economic development and standard of living in Latin American countries, it was necessary to choose a data set that would be conducive to this objective. I decided to run my analysis using data from just five Latin American countries. These countries are Brazil, Colombia, El Salvador, Guatemala, and Mexico due to the fact that these are the five largest recipients of remittances in the region. Since remittances are a relatively new component in the scheme of international capital flows, it was important to choose countries in which remittances already play a significant role in capital flows.

Table 1: Summary Statistics- Equation (1)

Variable	Obs.	Mean	Std. Dev.	Min	Max
GDP GROWTH	100	3.165028	2.606	-6.537	7.544
AID	95	2.58E+08	1.82E+08	-2.58E+08	1.01E+09
FDI	100	5.81E+10	8.72E+10	2.12E+10	4.01E+10
INV	100	18.995	3.448	12.6868	27.1074
GDP LAG	100	2472.335	1472.521	745.0704	7445.167
POP	100	1.5242	0.5945	0.3388	2.4991
REM	100	3.96E+09	5.68E+09	1.19E+08	2.69E+10
SCH	75	19.6748	6.3246	8.1889	35.358
TRADE	100	2.65E+10	6.94E+10	1.4285	4.01E+11
HDI	50	0.74582	0.060041	0.619	0.854

Since this paper set out to determine differences in effects on both economic growth and standard a living, a separate regression was required. Table 2 provides the summary statistics for the second model in regards to standard of living.

Table 2: Summary Statistics- Equation (2)

Variable	Obs.	Mean	Std. Dev.	Min	Max
AID	50	2.91E+08	2.20E+08	-5.778E+07	1.01E+09
FDI	55	8.79E+10	1.07E+11	1.80E+09	4.01E+11
INV	55	18.97206	3.4424	12.8801	27.1074
POP	55	1.3534	0.6773	0.33884	2.4991
REM	55	5.87E+09	6.98E+09	4.66E+08	2.69E+10
SCH	43	22.89826	5.86665	8.70055	35.358
TRADE	55	3.89E+10	8.94E+10	1.4285	4.01E+11
HDI	50	0.74582	0.060041	0.619	0.854

Because standard of living is a difficult idea to quantify, I must explain what entails the Human Development Index (HDI). When calculating this value, the United Nations takes into consideration three different dimensions: health, education , and living standards. For education, the measurement takes into account a country's life expectancy at birth. Mean years of schooling for adults and expected years of schooling for children are taken into account for education. Finally, gross national income per capita (not GDP per capita) is taken into account for the living standard component of the statistic.

3.2 Empirical Model

This study takes the initial model outlined by Rivero (2007) and applies it to an updated data set using just the aforementioned five Latin American countries. I then continue to add to the model by changing the dependent variable from economic growth provided by GDP growth to standard of living, in which I use a proxy of the Human Development Index as provided by the United Nations. The first model can be written by the following regression in equation (1):

(1)

$$\Delta GDP_{it} = \beta_0 + \beta_1 REM + \beta_2 FDI + \beta_3 SCH + \beta_4 AID + \beta_5 TRADE + \beta_6 POP + \beta_7 INV + GDP_{i,t-5} + \varepsilon$$

ΔGDP is the annual GDP growth rate for country i at year t . This is simply a measurement of the year over year change in gross domestic product. For this particular regression, I use eight independent variables. REM represents the inflow amount of remittances to country i . FDI represents the inflow amount of official foreign direct investment as calculated by the World Bank. SCH is a variable used to signify a country's education level. For this variable I use the percentage of the population that has received tertiary level education. AID is the official amount of foreign aid dollars that the host country has received in a given year. $TRADE$ is a proxy for the openness trade. It is calculated by the sum of exports and imports as a percentage of GDP. POP represents the population growth. INV is gross domestic investment and is represented as a percentage of GDP. This consists of additions to fixed assets of the economy as well as net changes in the inventory level. Finally, $GDP_{i,t-5}$ is the GDP level lagged by five years. This is used to provide a benchmark level for the country.

The second model used in this study set out to analyze the effect that these determinants of economic growth that are consistent with the model provided by Rivero (2007) would have on standards of living. The model can be expressed in the following equation (2):

(2)

$$HDI = \beta_0 + \beta_1REM + \beta_2FDI + \beta_3SCH + \beta_4AID + \beta_5TRADE + \beta_6POP + \beta_7INV + \varepsilon$$

Here, our dependent variable is standard of living represented by *HDI* which is a proxy of the Human Development Indicator as provided by the United Nations.

4.0 Empirical Results

The objective this study was to compare different determinants of economic growth and their effect on standards of living in Latin American countries, primarily comparing inflows of foreign direct investment and remittances. When analyzing the results of equation (1), we find five of the variables to be significant. The results are shown in Table 3.

Table 3: Regression Results- Equation (1)

	Coefficient	t-statistic	Prob.
<i>CONSTANT</i>	-5.5636	-2.17358	0.0333
<i>AID</i>	3.05E -11	0.01736	0.9862
<i>FDI</i>	-4.72E -11**	-2.4564	0.0167

<i>INV</i>	0.41006***	4.09889	0.0001
<i>GDP_{i,t-5}</i>	-0.0006*	-1.96549	0.0537
<i>POP</i>	0.25165	0.364685	0.7165
<i>REM</i>	4.56E -10**	2.210858	0.0305
<i>SCH</i>	0.091995	1.308675	0.1952
<i>TRADE</i>	4.75E -11***	2.858398	0.0057

Note: ***, **, and * denotes significance at the 1%, 5%, and 10% respectively

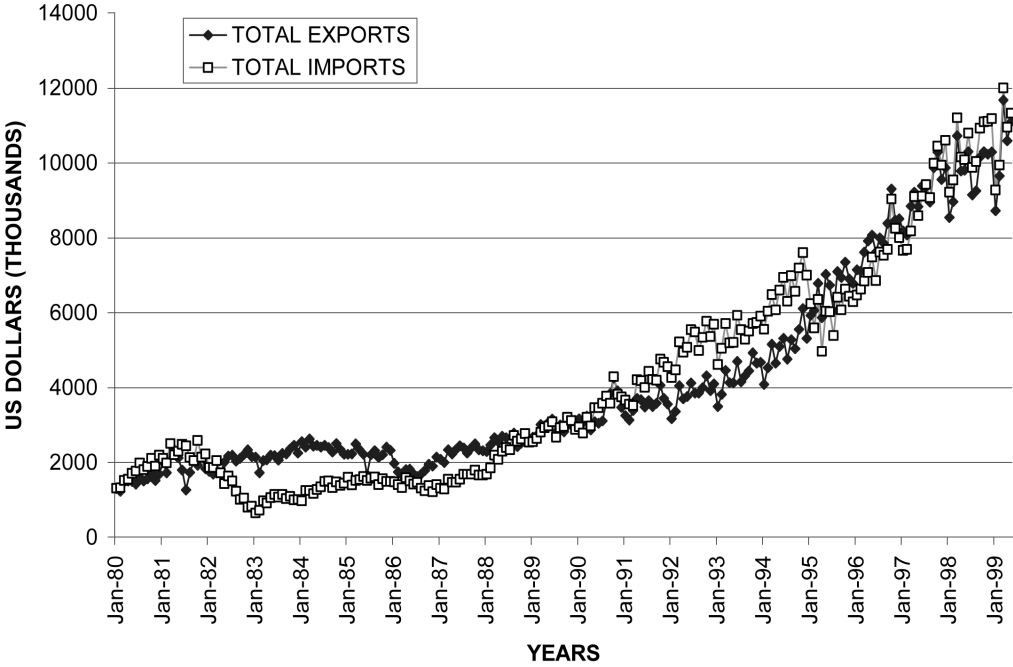
The results from Equation (1) show an interesting development between the two main variables that are being discussed here. Both foreign direct investment and remittances were deemed significant at the 5% level. However, surprisingly foreign direct investment had a negative correlation with GDP growth as opposed to remittances which had a positive effect. The fact that this study shows the positive correlation between remittances and economic growth is constant with previous findings. (Rivero, 2007; Fayissa et al., 2010).

The other significant variables in the equation were education level and trade openness. Education level had a positive correlation, signifying that the higher the percentage of the population that receives tertiary education, the higher the GDP growth. This factor is especially important for developing countries, which the countries in this data set have been categorized as for the past twenty years, since a rise in tertiary education levels can coincide a shift from an agriculturally based economy to one that is more heavily focused on industry and services. With higher education levels comes the opportunity for greater technological advances within an economy, one of the basic needs for economic growth as explained by the Solow Growth Model.

Surprisingly, openness to trade had a negative correlation to GDP growth. However, this may have been distorted by the fact that the timeline for our data set almost perfectly correlates

with the lifetime of NAFTA (North American Free Trade Agreement). NAFTA went into effect on January 1, 1994 allowing Mexico to trade with the United States and Canada tariff-free. Naturally, Mexico saw a rapid growth in their exports and imports, especially to and from the United States. Figure 3 shows this growth in the immediate years following the adoption of NAFTA.

Figure 4: Trade in Mexico



Source: Banco de Mexico 1999

Even using the data that was used in this regression (the sum of exports and imports as a percentage of GDP), Mexico saw a staggering rise when NAFTA came into place. In 1993, this percentage was 15.2% for Mexico. Just two years later after the agreement was established, this percentage rose to 30.4%.

NAFTA was supposed to provide benefits to both the United States and Mexico based on the premise that free trade provides economic benefits. However, due to many reasons such as exploitation of labor, NAFTA has not provided the benefits that it set out to provide. This abnormal rise in trade may have distorted the data. Therefore, it would be suggested that reevaluation take place on the effect of trade openness on GDP growth.

Of course, as previously explained, GDP growth does not always equate to a higher standard of living for a specific people. Therefore, equation (2) took these same variables (less a variable representing GDP growth) and determined the effect that they have on the United Nation's Human Development Index, which was used as a proxy for standard of living. Table 4 shows the regression results.

Table 4: Regression Results- Equation (2)

	Coefficient	t-statistic	Prob.
<i>CONSTANT</i>	0.635221	12.70513	0.0000
<i>AID</i>	-2.83E -11	-0.88062	0.3853
<i>FDI</i>	9.30E -13***	3.814316	0.0006
<i>INV</i>	-0.002864	-1.271514	0.2130
<i>POP</i>	0.015820	1.659358	0.1071
<i>REM</i>	-5.56E-12**	-2.269483	0.0303
<i>SCH</i>	0.006237***	-3.060149	0.0045
<i>TRADE</i>	-6.61E -13***	-3.060149	0.0045

Note: ***, **, and * denotes significance at the 1%, 5%, and 10% respectively

Again, our two main variables proved to be significant with FDI having a significant level of 1% and remittances being significant at the 5% level. However, this time we get a different story from the data as FDI now has a positive correlation and remittances have a negative correlation. There are many possible reasons as to why this has proven to be so. As previously discussed, there is a school of thought that views regressions as insignificant because they are simply small transfers of money that are usually used for everyday consumption and are not used in the necessary manner to provide long term growth and development. The findings of this paper seem to be consistent with this point of view. Consumption is always a major component of an economy (upwards of 70% in the United States). If remittances can provide increases in consumption, then it should be expected to have a positive impact on economic growth. However, unlike FDI, which provides basis for long term growth, this increase in consumption can be seen as a temporary stimulant, similar to that of stimulus package.

As for the rest of the variables, the same story can be told as that in regards to Equation (1). Level of education and openness of trade proved to be significant having positive and negative correlations, respectively. It should be noted that none of the other variables were found to be significant in either equation.

5.0 Conclusion

From this analysis, we can conclude that both foreign direct investment and remittances are significant determinants of both GDP growth and standard of living in Latin America. However, they flip flop as whether they have a positive or negative correlation. In terms of GDP growth, remittances were found to have a positive effect while foreign direct investment was found to have a slightly negative effect. These correlations switched when compared to standard of living.

This can be attributed to strong relationship remittances have on consumption and the heavy effect that consumption has on GDP. Also in consideration is the fact that foreign direct investment is often a more long term growth factor, which would explain effecting standard of living.

As for policy implications of these findings, both variables can be useful. We know that foreign direct investment will encourage higher standards of living, so this should continue to be encouraged by developing countries. From the data, we can see that remittances clearly have strong correlations to both dependent variables. We also see that there does not seem to be a significant decrease (or decrease at all) in the amount of remittances. Therefore, policy makers should take this into consideration and potentially determine means that would allow for remittances to not just be used in everyday consumption, but rather in a more long term focused manner.

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