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Can Foreign Assistance and GDP Per Capita Create Potential Migration in Nicaragua?

國際援助和人均生產總值可以促使尼加拉瓜人民遷移至其他國家嗎？

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Abstract

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How can two essential indicators create migration?

Located in Central America, Nicaragua has a history of outward migration despite international economic assistance through international organizations. In this sense, the monetary assistance in the form of Net ODA per capita ideally has a relation in determining and predicting migration. Using STATA software, a possible relation and its level of correlation can be calculated. After a literature review is gathered, the next significant step will be the acceptance or rejection of the null hypothesis, that is: Net ODA per capita creates net migration from Nicaragua. Under a multiple linear regression model, a second independent variable will be integrated into the analysis: GDP per capita. Both independent variables represent quantitative indicators that will validate the strength of the analysis.

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Table of Contents

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

List of Tables

List of Figures

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

Chapter 1: Introduction

1.1 Background

The Republic of Nicaragua is located on the American continent, more specifically in Central America. It is the largest country in the Central American isthmus and as of July 2017 has a population of 6,025,951 according to IndexMundi (2017). While the official language of Nicaragua is Spanish, the Republic also contains several ethnic groups, each with their own officially recognized language. It is a country with a rich and diverse history that marks important moments in the long path that has led the Nicaraguan people to where they are today.

Nicaragua contains 15 departments, 153 municipalities, and 2 autonomous regions. The country is divided into 3 geographic areas: The Pacific region with 7 departments, includes the capital city of Managua and other relatively developed cities (with regard to their infrastructure) and is historically the oldest region since colonization by the Spanish; The Central region in which agriculture and animal husbandry are the major industries driving the regional economy; and the Atlantic region, where the two autonomous regions are located along with the historical home of almost all Nicaragua's ethnic groups. Many people from these groups are leaving the region and while sadly this part of the Nicaraguan republic is of the least importance to the government, it is nonetheless home to the Bosawas biosphere reserve, which at 15% of the country's total land mass is the second largest rainforest in the Americas. In 1997, the rain forest was designated as a UNESCO biosphere reserve. By possessing such diversity in soil and climate, Nicaragua is able to produce a great variety of crops not only for domestic consumption but also for export. These include coffee, which is produced mainly in the mountainous and colder areas of the country, as well as corn, beans, milk and dairy products, and seafood and meat, while the country's mineral rich areas also produce gold.

Nicaraguan people have long lived under continuous pressure both internally and externally, many of which have been caused by wars since the beginning of its history, as well as revolution, the fight for independence and migration. In addition, Nicaragua has faced external economic and political pressure from more powerful neighboring countries that have exerted their military might over Nicaragua.

The first wave of migration that we can point remotely to is the colonization period. With the discovery of America, Spanish and English citizens settled in the lands of all America thus originating the miscegenation of the newly discovered population and the old continent.

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

That period of time hundreds of years ago, included an emigration of citizens that sets the tone to consider in retrospect the fact of selecting migration as an important variable for carrying out this research.

Thus, the movement of Nicaraguan citizens seems to derive naturally from the period of the discovery of America with the settlement of European citizens. We could, in this way, state that regardless of the later findings of this research, without considering economic, social or political aspects, the perception of migration in Nicaragua is equivalent to the acceptance of this phenomenon or, in its absence, the impossibility of rejecting the veracity of migration and its impact.

In addition to a wave of emigrants to areas throughout America, emigration led to the process of forming a new society in the continent. But the differences in each country would become noticeable as the phenomena of migration differs under particular circumstances from country to country. To be specific, a lack of safety affects society in Honduras, our neighbor to the north, a factor that is not observed in Nicaragua nor in our southern neighbor of Costa Rica. Therefore, individual country level characteristics make Nicaragua migration a particular case for study using the corresponding country influencers.

War in particular has been present throughout Nicaragua's history even over the decision of which city would be its capital. Yet Nicaragua is characterized by hardworking people who are always willing to achieve progress not only through cultural development, but also and more importantly through economic advancement. That is why under the mandate of President Anastasio Somoza DeBayle, Nicaragua was known as the barn of Central America, given that its economy was able to supply the rest of Central America with all kinds of goods that it produced at that time. Unfortunately, in July 1979, Nicaragua fell under civil war where not only the duties of the government in command were taken over, but the economy also suffered greatly. Indeed, some studies have suggested that the economy has not yet fully recovered from the effects of this period and that Nicaragua is perhaps today enduring the worst days of its history. This has forced many people to leave the country not only because of scare resources but also because of fears over personal safety.

In 1990, following a period of turmoil, Nicaragua was finally able to hold free elections where by a near unanimous vote the government that had ruined the nation was removed from power and Nicaragua began a new era under the government of the first democratically elected female president. Later, elections were established every five years to allow the people to choose their leaders, elections that at least in 1996 and 2002 seemed to indicate Nicaragua was

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on the road to recovery. During those years, Nicaragua achieved noticeable, albeit not tremendous economic progress, accompanied by solid progress in its democracy.

However, in 2007 there was a new election where tragically the same government that in 1979 had risen to power by means of war, once again took office, only this time as the result of the democratic vote using a softer, different policy to that in the past. Regrettably, when after some time the government held fresh elections and the same president was reelected only this time amid widespread allegations of corruption and a lack of political transparency. Over time, he gave increasing power to the legislature and resultantly Nicaragua's economy has deteriorated in every way.

Given this background, it is now clear to see how Nicaragua truly depends on foreign assistance (Official Development Assistance per Capita, or ODA as the selected indicator of aid effectiveness in this research) obtained via loans from numerous organizations to keep the Nicaraguan economy flowing, help improve GDP per capita, and get the economy back on the road to recovery. It is also possible to see that migration is an important factor in Nicaragua's development; therefore, this research will utilize these two indicators as the main sources for study.

The World Bank (2018g) defines Net ODA per capita under detail information as:

> Disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies of the members of the Development Assistance Committee (DAC), by multilateral institutions, and by non-DAC countries to promote economic development and welfare in countries and territories in the DAC list of ODA recipients; and is calculated by dividing net ODA received by the midyear population estimate. It includes loans with a grant element of at least 25 percent (calculated at a rate of discount of 10 percent).

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The following figure shows a chronological disbursement (Net ODA received per capita. World Bank):

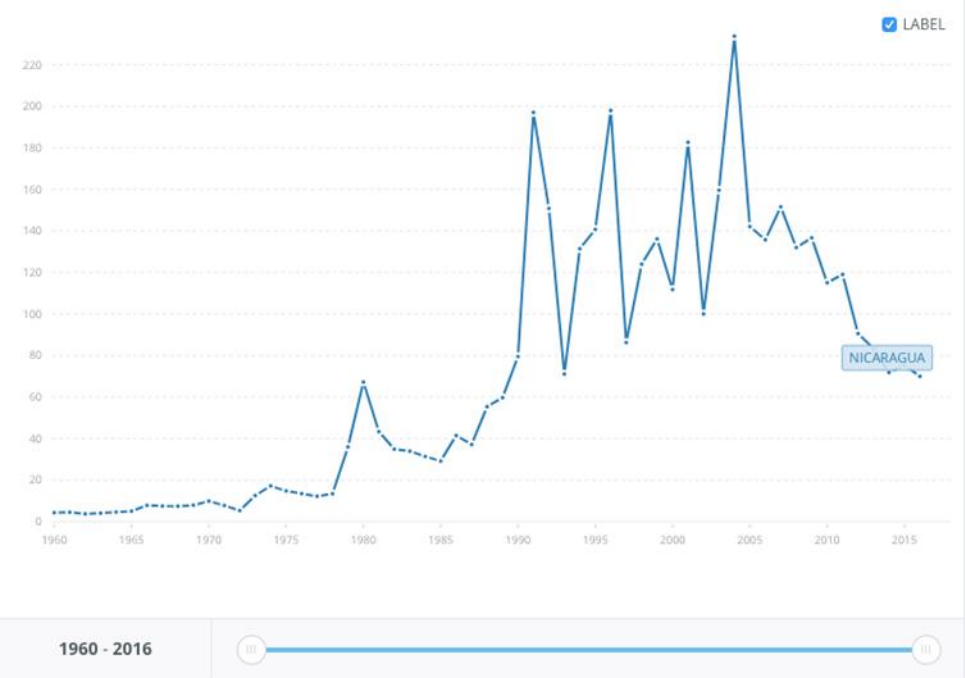

Figure 1. Net ODA received per capita of Nicaragua. Adopted from "World Bank," 2018g, Retrieved from https://data.worldbank.org/indicator/DT.ODA.ODAT.PC.ZS?locations=NI&view=chart

The Organization for Economic Co-operation and Development (2018a), defines the distribution of net ODA as:

> Geographical aid allocations. Net ODA may be distributed by income group (least developed countries, other low-income countries, lower middle-income countries, upper middle-income countries, unallocated and more advanced developing countries and territories) or by geography (sub-Saharan Africa, South and Central Asia, other Asia and Oceania, Middle East and North Africa, Latin America and the Caribbean, Europe, and unspecified).

At the same time, there are different ways loans can be made, in a direct monetary way (money given from the donors to recipient's countries), this given money will be implemented in the areas of education, health, and economic infrastructure among others. It also can be given in a technical way (more likely for agricultural assistance) as showed in the following figures: (Foreign assistance distribution in Nicaragua, OECD)

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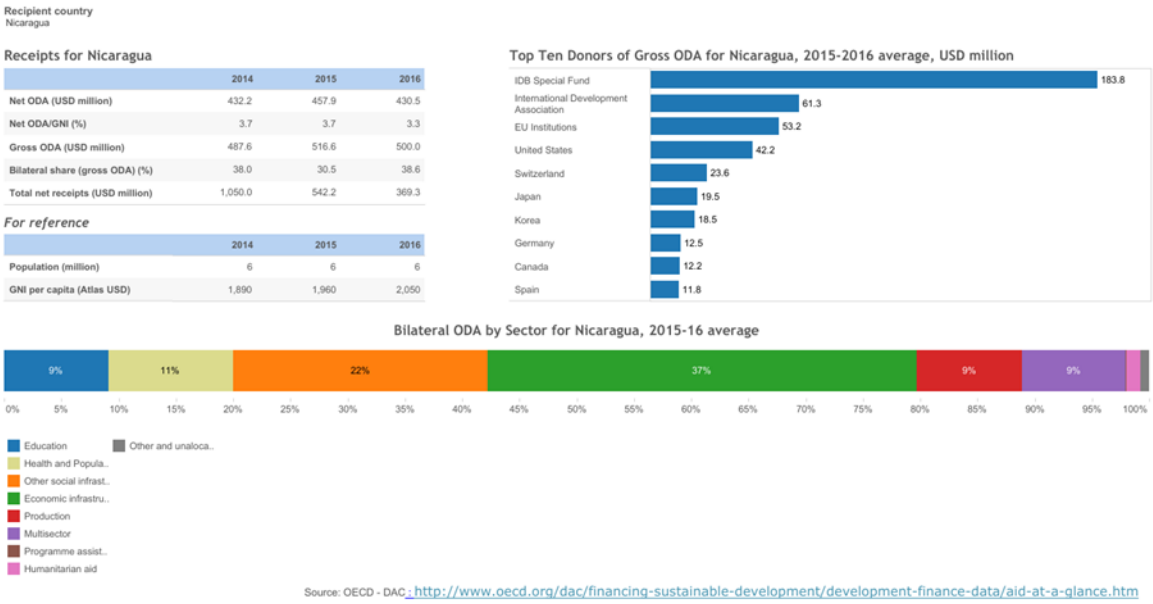

Figure 2. Summary charts by aid (ODA) recipients. Adopted from "Organization for Economic Co-operation and Development," 2018b, Retrieved from https://public.tableau.com/views/OECDDACAidataglancebyrecipient_new/Recipients?:embed=y&:display_count=yes&:showTabs=y&:toolbar=no?&:showVizHome=no

Meanwhile, the United Nations (2017, p13) International Migration Report refers to net migration as:

> Net migration, for a given country and time period, refers to the difference between the number of immigrants and the number of emigrants, irrespective of citizenship. If more people immigrate than emigrate, the country gains population due to positive net migration, or net immigration; when more people emigrate than immigrate, the country loses population through negative net migration, or net emigration.

Moreover, the World Bank (2018f) defines Gross Domestic Product per capita (GDP per capita in current US$) as:

> Gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars.

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

GDP per capita is very important in short words because we can find out how good a country's economy is and how wealthy the population of that country is, so we can say that the higher GDP per capital a country has, the best its population lives.

1.2 Motivation

When reviewing information on Nicaragua's history it is possible to identify different aspects that mark with great importance each and every stage that Nicaragua has encountered. Be it natural disasters or political conflicts either internally and externally, these events have brought with them an impact that for some has been positive and for others less so, and even extremely negative. Therefore, the AID of other countries has been crucial for the economic stability and for the development of each individual who seeks a better standard of living. And yet despite the generous and effective AID plans both monetarily and via management of how to implement better and more far reaching AID programs, it is still possible to observe some movement of people emigrating to different regions.

1) **Personal experience**: born in 1986, I lived the first years of my childhood in a neighboring country without knowing that my family had emigrated from our hometown in Nicaragua in 1979 due to the turmoil that the country was going through.
2) **Social media**: Nicaraguan news about the National government's efforts to receive foreign aid to benefit all sectors of the Nicaragua economy for a better, more effective, and more rapid growth path. As showed by Espinoza (2017) more than $900 million dollars in loans were given to the Nicaragua government to improve the road infrastructure in the capital city. At the same time, we can see news concerning Nicaraguan migration towards foreign countries; Romero (2017) talks about migration and the three countries that are most likely destinations for Nicaraguan people to migrate to.
3) **Social reality**: Through mass communication media we can see how the Nicaraguan citizens have sought a better living standard, by pursuing improvements in health, education, and income. As a result, the option for immigration is a latent consideration. The minimum wage and the basket of goods show a disproportionate relationship. According to Bejarano (2018) the maximum and minimum range for minimum wages ranges between C$4,176.69 and C$9,346.59 (Nicaraguan Cordobas – agricultural sector and insurance/financial sectors). This amounted corresponded to US$134.02 and US$299.59 (based on the official exchange rate (Banco Central de Nicaragu,

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

March 2018). While the basket of goods, according to Instituto Nacional de Informacion de Desarrollo (2017) was available from C$12,577.49 (US$439.61), corresponding to the official exchange rate (Banco Central de Nicaragu, June, 2016). Given this we can see that the minimum wage is not enough to cover the basket of goods.

4) **Long term Dependency**: Since the 1960's Nicaragua has received ODA disbursements. Currently, according to the World Bank (2018a), Nicaragua continues to be classified as a low-middle income country. The ODA disbursement have been continuously provided to Nicaragua governmental agencies .

Based on these observations, we can take into true consideration just how important it is for a country like Nicaragua to obtain ODA and to implement better conditions in a continuous way for the nation as a whole. But also, and most importantly, foreign assistance and migration are really important for a society since foreign aid or assistance is a facilitator for people to work and achieve a better standard of living, which brings with it a higher GDP per capita, but without a key and truly important sector like labor, foreign assistance will mean nothing.

1.3 Problem Statement

Net ODA per capita, as well as migration, are for many people of Nicaragua issues isolated from social reality. Both points, which create an impact on society in Nicaragua, are unknown in terms of their importance because the real figures or corresponding measurements are not available.

We can speculate that internal factors such as the economy, health, education, and social welfare play a predominant role in Nicaraguan migration. In addition, international factors such as family members, friends, or acquaintances have an influence on migration, while the perception of better economic opportunities in foreign countries are external stimuli for migration.

As secluded factors from each other, migration and Net ODA are observed and recognized only by those who have a close working relationship with them, or for whom migration and net ODA directly or indirectly influences their lives and, to an extent, the future after the implementation and experimentation of these two key factors.

Net ODA, when entering the national budget of Nicaragua, represents tangible results through the projects or the corresponding usage in which these funds are implemented

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

according to previously established agreements. There is no doubt that the necessity for these financial resources is essential for the balance and promotion of the quality of life in Nicaragua. However, unanimity about the effectiveness and efficiency of the implementation of these funds (as definite and accurate measured results) is not concrete.

The criticism towards foreign assistance, by pointing out the weaknesses in its implementation, represents a problem for the total positive acceptance of international aid, which for some people may constitute a door for the flight of monetary resources.

Also, the lack of a reliable measurement with respect to the implementation of the international financial assistance poses a problem that increases:

1) Distrust in the population towards the government of the country and its capability in terms of fund management
2) The belief of the existence of possible secondary purposes that do not refer to the intentions expressed and agreed between the government and international agents.

Logically, we can establish an empirical connection between the importance that represents Net ODA and migration in Nicaragua. In other words, the improvement in the quality of life of the population of Nicaragua that would depend on international assistance is impaired. The aforementioned problems are found in relation to Net ODA per capita.

Thus, migration in a society as a whole, and demarcated from the implications it brings to the country, leads to problems at different country levels including individuals, families, and society in Nicaragua.

1) Migration, in terms of cons, brings core problems to households that experience it. On many occasions, one or more family members leave the country and despite the longing or reasons for the migration, the family disintegration can have a negative repercussion on both family members who remain and the country of origin, as well as on the family members who leave the country.
    a. For instance, the psychological impact on children can negatively affect education, school attendance, and social skills up to the point of becoming an agent of social instability. Family mutilation can bring disinterest in unity and therefore apathy towards improvement by society as a whole.
    b. Young people and adults can experience depression, anguish, and fear. For those who leave the country, feelings of regret or disinterest to support the members of their family have been observed in some cases. If apathy is observed on the part

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

of the migrant, the negative consequences on the residing family at the country of origin can be even more aggravated and more negative.

2) For society, the flight of human capital is a major problem from an economic perspective. The labor force, which is reduced over time, could have a negative impact on both foreign direct investments and national investments for the promotion of new jobs. The human capital that leaves the country increases the drain of knowledge and trained manpower. The skilled workforce and education of those who know the culture and real circumstances of the country, creates a lack of human resources locally that hinders the economic growth of the country in terms of productivity.

From a global perspective, migration often negatively affects both receiving countries and countries of migratory origin. Cultural, educational, and language shocks in addition to a deficiency of laws and knowledge increases social, labor, and economic problems for both countries.

In this way, as both migration and foreign assistance in the absence of adequate guidelines increases, negative consequences trigger a spiral effect at regional levels.

1.4 Objectives

Given this, this research paper is oriented towards the following objectives:

1) To focus analysis on how important foreign assistance could be to the flow of people to other countries.
2) To find the strength of the relationship between foreign assistance or Net ODA **(independent variable)** and migration **(dependent variable)**, **in a first stage and in a second stage to analyze the tendency of migration by adding a second variable in this case GDP per capita (independent variable) in a multiple regression line with independent variables**
3) To establish a past, current and future tendency once **foreign assistance, GDP per capita, and migration** are linked under the selective methodology.

1.5 Hypothesis

For the simple linear regression, the hypotheses are stated as follows:

1) **Null hypothesis**: there is no linear relationship between migration and ODA per capita.

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

2) **Alternative hypothesis**: there is linear relationship between migration and ODA per capita.

As explained earlier, after running the simple regression, we will run a multiple linear regression. Consequently, the previous set of hypotheses will have a second proposal as follows:

1) **Null hypothesis:** there is no correlation between the dependent variable and the predictors. All the coefficients of the independent variables are equal to zero.
2) **Alternative hypothesis**: there is a correlation between the dependent variable and the predictors. At least one of the independent variables coefficients is different from zero.

The two sets of hypotheses will be scrutinized under the application of the models with their corresponding data and software development.

1.6 Thesis Structure

The structure of the thesis comprises five chapters through which the research of the proposed topic will be developed, revolving around those key points selected as the framework. These key points will help to create a focus of the work as it flows.

In chapter one we will introduce the country with general data and facts as a starting point of the research. Including definitions, motives, observed problems, objectives, hypotheses and a graph for a simple visualization of the research.

Chapter two will contain the relevant works from a literature review that support the ideas for migration and the Net ODA per capita as the main nominated variables. Preponderance to support the conduct of this work is necessary to achieve relevance to the analysis of the relationship between Net ODA and migration.

Chapter three will explain the methodology with basic theory for the understanding of the application of subsequent corresponding procedures in the following chapter.

Chapter four will practically develop through software the analysis of the collected data from the available sources. Application of the particular program facilitates the understanding and visualization of the numerical relationship of the variables in chapter one.

Finally, chapter five will contain the analysis of the results obtained from the application of the program in chapter four. We will be able to obtain conclusions that will relate to the objectives of the thesis. Also recommendations for future studies will be reflected in the concluding chapter.

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

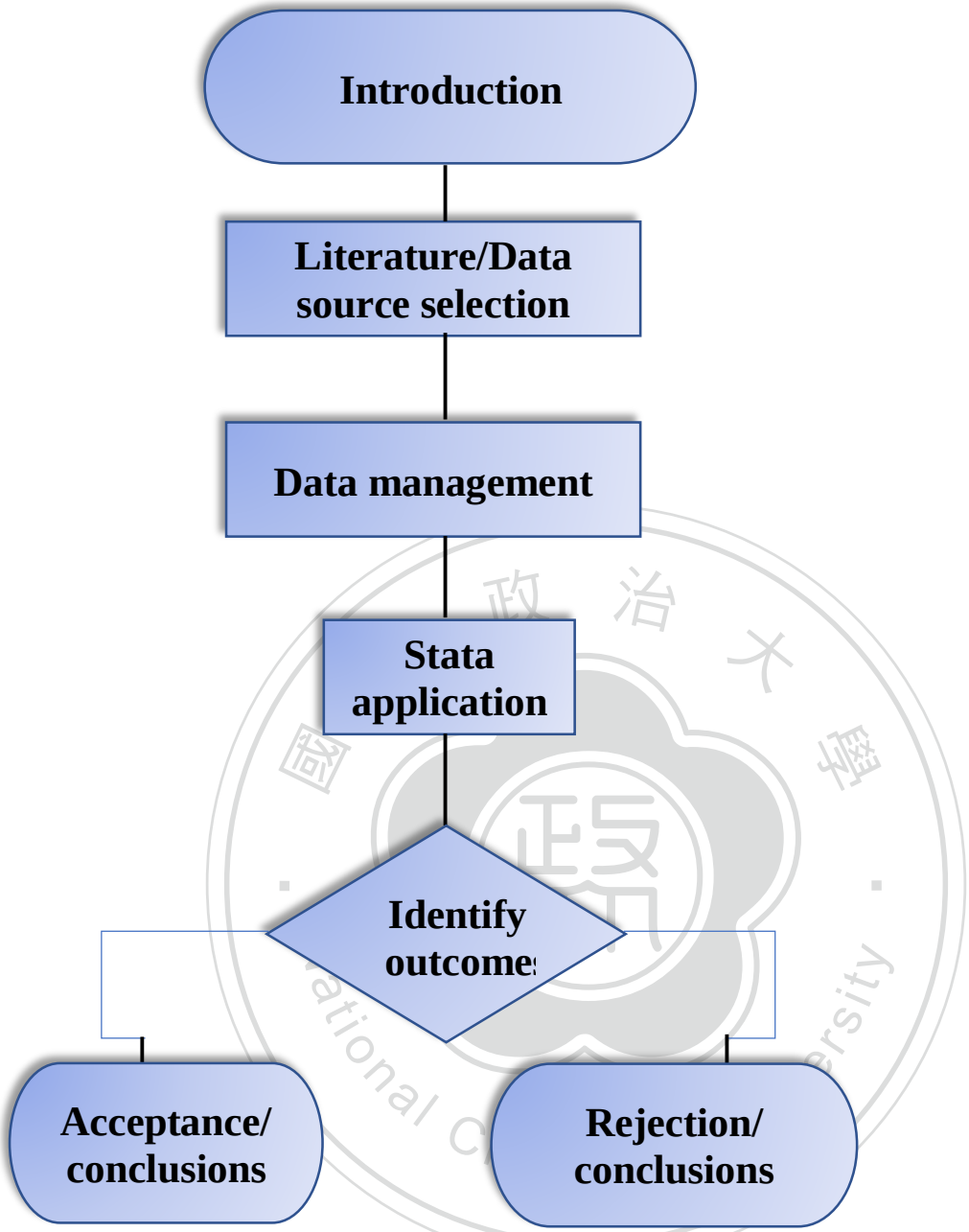

Figure 3. Research Flow Chart

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

Chapter 2: Literature Review

Negative effects are detected while investigating migration research. Among them, education and health problems have been the focus of many journal publications and so too form the focus of this section. However, positive effects are also found if the investigation is expanded further.

2.1 International Relations: Neoliberalism, Globalization, and Migration

Although the theory of Neoliberalism has been related to economics, the implementation of direct analysis of the theory is implicitly connected to migration under a linkage of globalization and current worldwide economic practices. Neoliberalism, as one of the suitable theories, acts an umbrella for migration regardless of possible critiques. That is to say, Neoliberalism is not the final answer but instead a reason for migration.

The rise of new reformed international relations theories, including neoliberalism, has taken place over the last few decades, and complementing the existing classical theories. The emergence of neoliberalism represents an opportunity for understanding migration under the concept and perspective of the new liberal approach. Challenging the general tendency of addressing migration with negative perspectives, refutation was proposed by De Genova, Ong and Rosewarne who indicated that when viewed from the perspective of neoliberal policy, we begin to see quite a different image of irregular migration. Furthermore, more critical research into irregular migration spotlights the position held by governments in assisting with transnational capital accumulation and how such a role infers a tolerance of such migration (as cited in McNevin, 2006, p. 140).

For McNevin (2006), the acceptance of migrants into the economy and political society is practical but with a restriction of legal participation as native members of the receiving country. Therefore, irregular migrants are suitable under neoliberal characteristics for economy and labor force mainly but with a limit of complete neoliberal belief which suggests migration would benefit the overall performance of the economic growth. Accepting the benefits generated by migrants but establishing constraints to the benefits the country offers to citizens summarizes the article evaluation.

Following the definition already introduced, Neoliberalism is expanded in its application with globalization and cooperation. Mansbach and Tyler (2007) indicated states are looking for absolute gain in their interaction with the other states. While doing so, the cooperation

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

among states allows the use of international institutions as actors, creating a network of interdependence of economics, trade and politics. And the interaction takes the form of cooperation, which can be a starting point of globalization and international migration.

As cooperation became necessary, other actors, besides the central part of governments, such as Non-Governmental Organizations or international agencies and institutions contribute to the observations made and in themselves influence migration.

As mentioned by Castles (2002, abstract), "Globalization, defined as a proliferation of cross-border flows and transnational networks, has changed the context for migration. New technologies of communication and transport allow frequent and multi-directional flows of people, ideas and cultural symbols." Ferguson and Gupta noted that "western donors, Nongovernmental Organizations representatives, and international investors create the context for the emergence of new forms of neoliberal governmentalities that are transitional" (as cited in Cotoi, 2011, p. 121).

Mansbach and Tyler (2007, p. 27) mentioned that "Neoliberals are strong supporters of international organization. Such organizations, they believe, help states coordinate their activities by allowing for repeated interactions. In this way, international institutions promote order and achieve goals that no single state could achieve on its own." An appreciation about cooperation, globalization, and coordination and their natural relation under Neoliberalism is acceptable.

Globalization is both the result and a proposer of migration carrying along economic results. Castle and Miller and Sassen commented, "International migration is widely recognized as an integral component of globalization" (as cited in Sanderson and Kentor, 2009, p. 301). International movement is an amalgamation about the ideas of Glick Schiller, Basch and Szanton Black and Portes, Guarnizo and Landolt who agreed on and unanimously expressed that "International migrants facilitate globalization processes by linking together disparate peoples and places into an increasingly single, shared global political-economic context" (as cited in Sanderson and Kentor 2009, p. 301).

Migration takes importance under the core of globalization. Therefore, the treatment and policies toward migrants are followed and promulgated by those respective organizations or actors in the global scenario. Therefore, this organization creates pressure on states to validate the needs of migrants in their different classifications. Jacobsen (1996, p. 663) commented:

> The threat of bad international publicity is used by refugee organizations to pressure host governments towards more positive refugee policies. Most governments desire to be in

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

good international standing and do not wish to appear inhumane, so the publicity given to refugee abuses is a political consideration shaping their responses.

Nevertheless, the extent of the force created by those organizations depends on the reality of the situation. Both push for the helpful resolution of migration issues and are reluctant to accept that any impulsion exists. The nation's response to the pressure exerted by such international organizations is seen in some cases to have possible negative disposition. Sarin (2003, p. 8) wrote that a "growing number of nations, both developed and developing, have adopted policies aimed at curtailing, rather than encouraging, immigration." This is noticeable in recent events. As Nicaragua citizens represent a good example of a country with migration experiences, the antagonism of the Nicaragua government has also been observed. Jose (2018, para. 4 & 5) wrote:

> A wave of migrants seeking to reach the United States before that country stiffened its immigration policy generated a crisis to which several Central American countries, as well as Colombia and Mexico, sought a solution. But the government in Managua, headed since 2007 by the Sandinista National Liberation Front's (FSLN) Daniel Ortega, refused to participate in joint actions to facilitate the mobility of the 3,000 Cubans who had been stranded in Costa Rica, on the border with Nicaragua.

The roles of all actors in the migration field are clear. By accepting the absolute gain by states, and therefore, the acceptance of a Neoliberal theory, the creation of definitive policies toward migration should be adequate and equally shared among all participants both the individual (migrant) society and at the state level. However, reality is different according to Castles (2004, p. 852), "Migration policies often fail to achieve their declared objectives or have unintended consequences, three sets of reasons for this: factors arising from the social dynamics of the migratory process; factors linked to globalization and transnationalism; and factors within political systems."

Oberman (2015, p. 240) addressed that "while the importance of the human right to stay and its implications regarding poverty alleviation has been overlooked, the very existence of the human right to immigrate has been denied." Migration includes, in a general comment, a positive contribution to states through the exercise of migrant labor. Ostergaard-Nielsen (2003, p. 9) better summarizes Neoliberal ideas and migration while proposing: "in theory, of the neoliberal kind, migration should be a win-win situation. It is therefore in the interest of sending

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

countries to control who leaves and who does not, to ensure that migrants return with skills." This assertion, intrinsically involves the work of the nature of Neoliberalism and the actors within its application."

2.2 Reason for Migration

From a personal point of view, migration is the single result of a personal choice behind which a range of diverse reasons are hidden. It is a resolution involving a desire to overcome, in most cases, negative current life circumstances. The desire to improve one's life situation might be a fitting explanation for migration in a general perspective without eliminating multiple motivations for each and every single migrant and their background.

Clark and Maas (2015, p.65) in their work concluded:

> Households do move to improve economically or in social terms. In this sense, the long-term concern with gains from migration is relevant and useful. At the same time, this research documents in greater detail than previously that moving to improve is a multidimensional process. Jobs per se are only one of the driving forces in relocation choice although they are the context within which moves occur.

Nowadays the reality of migration covers people of all ages, gender, and educational level among other aspects. The concern for restricting migration to a particular and clearly identified field is erroneous. Talented well-educated people are mentioned on Cerdin, Diné and Brewster (2014, p. 152) whose work indicated:

> Effective talent management in an international organization implies making the best use of talent from anywhere in the world. This means understanding what motivates the talented individuals to migrate, which, as we show in this study, is closely connected with their successful integration.

Young migrants have captured more attention in recent times. The action of young migration is viewed as tangible while the traditional idea of old people migration is set aside. Tucker, Torres-Pereda, Minnis, and Bautista-Arredondo (2013) explained for almost one-third of the migrant youth, their parents made the final decision to migrate without consulting the youth. Nevertheless, opposing to the migrating decision was not analyzed because youngers

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considered migration was an alternative in order to achieve a better life with better educational opportunities for them. Tucker et al. (2013, para. 19) also preponderated that "the most common reason for migration echoed amongst almost all migrant youth was financial need and lack of local employment opportunities in their home communities."

On the motivations for younger migration from the Central American region, under the specific and powerful reason of social unease experienced by citizens in the 1990s and which has not yet concluded, Monico (2017, para. 6 & 7) commented:

> Civil wars in El Salvador, Nicaragua and Guatemala may have ended in the 1990s, but the violence has taken new forms. Since the wars, organized crime and corruption within Northern Triangle countries have become widespread. They are key factors that "push" migrants to move out. Meanwhile, there has been little economic development in the region, and there are limited educational opportunities for youth. These factors create the allure of opportunity in the north that "pulls" young people to migrate far from home.

Specifically, Nicaragua and the reasons for migration are linked to political instability. War and socio-economic hardships, as the result of this civil confrontation, ignited the movement out of the country because of the difficulties during the period. Without discarding, but on the contrary adding to the previous economic, family, and professional migration reasons, the high level of migration in Nicaragua derives from political reasons and war. This asseveration has echoes in Cervantes-Rodriguez (2006, para. 9) who pointed out that:

> Large-scale emigration from Nicaragua during the so-called "Sandinista period" (1979-1989) was propelled by the proliferation of political turmoil and life-threatening scenarios, a widespread shortage of consumption items, unemployment, and a worsening of living conditions for certain segments of the population. The dramatic scenario within which emigration took place in the 1980s was framed by the imposition of US economic sanctions, and the Sandinistas' misleading economic policies and escalating corruption. By the mid-1980s, the migration process itself further propelled emigration through "the demonstration effect" (i.e. the imitation of consumption habits developed by migrants) and "relative deprivation" (i.e. the sense of deprivation based on the income earned by emigrants and returnees and their overall standards of living).

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The aftermath of social and political disputes embraced a high determinant for Nicaragua migration. Although without the same connotation, even natural disasters have influenced the migration process. Even in the current situation and with an increasing probability of occurrence, natural disasters have become a motivation for Nicaragua motivation that cannot be discarded. As mentioned by Loebach (2016, p. 188):

> Within the context of developing communities and in cases in which a disaster impacts a households' incomes and capitals by disrupting the functioning of the local economy and destroying a productive assets and land, the pursuit of livelihood migration is a plausible ex-post household adaptation response.

2.3 Side Effects of Migration

The number of migrants is remarkable and undeniable. Around the world, under different circumstances and for various reasons, migration continues to take place. As the number of migrants increases in North America, particularly among Latinos, the attention towards migration is real and growing. For Santiago-Rivera (2003) Latinos comprises a diversified group of people who come from different Spanish-speaking nations. Santiago-Rivera (2013, p. 1) also comments that:

> This remarkable growth, coupled with the potential negative effects of the migration and adaptation process, poverty, discrimination in education and employment, and the inequities associated with access to quality health care, place Latino individuals and their families at risk for developing physical and psychological problems. Despite the risk associated with these life circumstances, Latinos historically have underutilized psychological services.

Also, migration imposes effects on members of the migrating family. The migration action is not an isolated decision without any consequences. On the contrary, it is a choice that introduces not only a change in life for family members but also carries with it a heavy burden. Silver (2014, p. 196) indicated:

> The out migration of family members may induce significant stressors both at the point of migration and during its aftermath. For transnational families, stresses associated with

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migration may include: 1. familial separation; 2. the breakdown of social support networks and; 3. the addition of new roles and responsibilities for all family members.

In addition, Feliciano (2005, p. 841) stated that "immigrants, especially from Asia and Latin America, have entered the United States in record numbers since 1965- This seemingly endless immigration flow will shape American society in crucial ways, and its impact hinges on the adaptation of immigrants, and, most critically, their children."

The possible negative effects of migration might be observed in both members of the family who stay at the hometown and in those who immigrate. In his study, Hovey (2000, p. 126) indicated that:

> The recent sociopolitical climate (e.g., civil war, government repression, and resulting trauma) in Central American countries such as El Salvador, Guatemala, and Nicaragua may result in elevated levels of distress among individuals in these countries. Greater premigration trauma among Central Americans may therefore account for greater distress after migration.

Hovey (2000, p. 125) also suggested that "family dysfunction, ineffective social support, nonpositive expectations concerning the future, low levels of religiosity, low levels of education and income, and lack of agreement with the decision to immigrate were significantly associated with high levels of depression and suicidal ideation."

With the same relevance, health and education are fields are seen as primary factors for those people related with migration. Prior and post migration, problems regarding the education of migrants are noticeable. Portes and Rumbaut suggest:

> Poverty among immigrants is not the result of their immigrant status or a lack of hard work, but a direct result of their lack of education. The argument that education is the best predictor of economic success leads to the conclusion that adult education has a significant role to play in providing effective education programs for immigrant Americans, since such programs could be their first exposure to the culture of Americas educational systems (as cited in Alfred 2002, p. 5).

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

Migrants' identity, culture, and practices, to a certain extent, present an element of ambiguity when taking into consideration the stress generated by radically changing their environment and surroundings. A correct statement by Vertovec (2004, p. 970) says:

> Migrant transnational practices are involved in more deep-seated patterns of change or structural transformation. Such modes of transformation concern: 1) an enhanced 'bifocality' of outlooks underpinning migrant lives lived here-and-there; such dual orientations have considerable influence on transnational family life and may continue to affect identities among subsequent post-migration generations; 2) heightened challenges to 'identities-borders-orders' stemming from migrants' political affiliations in more than one nation-state; these particularly arise around questions of dual citizenship and nationality; and 3) potentially profound impacts on economic development by way of the sheer scale and evolving means of remittance sending.

Such identity will be preserved with demonstrated behaviors. Mooney (2003, p. 1166) found that:

> Three indicators of close social ties among migrants who live in the U.S. - migrants who live with family members or townspeople from Mexico and migrants who participate in a social club with other migrants - help determine which migrants spend remittances and savings on housing or production rather than spending them on consumption.

These findings demonstrate a positive aspect of migration contrary to many of the negative effects observed.

2.4 Economic Aspect of Migration

As published by M2 Presswire (2018, para. 1) in its release Remittance market 2018 Global Analysis, Opportunities and Forecast to 2022:

> Remittance is referred to as the money sent by immigrants to their families residing in their native countries. Remittance market plays a vital role in the economic growth and livelihoods of people across the world. Remittance inflows in developing countries make

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a notable share in their GDPs. The market is completely dependent on the migrated population living across the world.

As regards pro migration supports, migration, in fact, boosts economic benefits for countries. The ideas of the economics benefits of migration, which have created controversial opinions, are summarized with clear assertion by Clemens (2017, p. 1) “International migration and economic development are woven together. Over the long term, each supports the other in a virtuous cycle. Migration is thus one of many forms of development. Without this fundamental understanding, policy to regulate migration can go badly astray.”

The flow of money between countries from migrant senders to families in their home country has fluctuated without losing the importance of migration in the past few decades. According to the Asia News Monitor (2018) in its reports World: Record high remittances to low- and middle- income countries in 2017, remittances to low and middle-income countries had a boost with record level in year 2017. The report estimates an official amount of $466 billion in remittances which shows and 8.5 percentage increment. Worldwide remittances are expected to follow the same trend in 2018 at $4642 billion, equivalent to 4.6 percent growth.

Migrants' motivation towards achieving a better standard of living is eminent in the social circumstances of developing countries. As proposed by Diaz-Briquets and Perez-Lopez (1997, p. 411):

> The Notion that the determinants of remittances generated by refugee flows, particularly from Communist-inspired systems, are different from those associated with labor migrations. Labor migration, by definition, involves the voluntary departure from the home country in search of better economic options, whereas refugees, including those from communist systems, depart their homelands for a combination of political and economic reasons. These differences have a major bearing on how labor migrants and refugees perceive their relationship with countries of origin. The propensity of labor migrants to dissociate themselves from the home country is considerably less than among refugees whose perceptions are mediated by opposition to the ruling regime and other factors, such as political relations between refugee-sending and refugee-receiving countries and whether or not there has been a regime change or one is expected to occur. The conceptual issues elaborated here are based on the Cuban-American experience, but also reflect an assessment of Nicaraguan emigration during the 1980s.

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This is important since the history of Nicaragua includes both kinds: refugees and migrants. Diaz-Briquets and Perez- Lopez (1997, p. 411) also confirmed that "remittances, or the funds that transnational migrants send to their home countries, have become a major factor in international financial flows and in the economic well-being of many countries."

Adding to this, Shera and Meyer (2013, p. 4) corroborated the above suggestion by saying that "This flow of money across borders has profound social and economic impacts on various aspects of the home countries. In particular, remittances promote access to financial services for the sender and the recipient, thereby increasing financial and social inclusion."

Interpretation of their ideas can be stronger, as Shera and Meyer (2013, p. 9) added, "Migrant transfers in the form of remittances can ease the immediate budget constraints of families by bolstering crucial spending needs on food, health care, and schooling expenses for their children."

Adams and Page (2005 p. 1660) analyzed the results of international remittances of migrants and their impact on developing countries, finding that there was a strong statistically significant effect on reducing poverty. "On average of 10% increase in the share of international migrants in a country's population will lead to a 2.1% decline in the share of people living on less than $1.00 per person per day."

Years later Acosta, Calderon, Fajnzylber and Lopez (2008, p.110) reinforce the idea, concluding that "migration and remittances have statistically significant poverty-reducing effects that appear to operate mainly through increases in per capita income of remittances-receiving countries."

Therefore, it is a tangible observation made by OxResearch Daily Brief Service (2017, para. 9 &10) in its Latin America: Brain drain negates remittances when talking about the Latin American and Caribbean countries LAC, stating that:

> Depending on the country, family remittances offer a broad range of benefits for LAC households and economies: They provide a crucial 'extra' income that helps poor families meet basic needs, including food, housing, education and healthcare. Some households also use part of this income for savings, investments and small business ventures.

2.5 International Organizations

International organizations provide support through economic cooperation work with developing countries such as Nicaragua. Strong and very well-defined motives are stated by

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

the international institutions. The World Bank (2012) wrote that it "lends money to middle-income countries at interest rates lower than the rates on loans from commercial banks. In addition, the Bank lends money at no interest to the poorest developing countries, those that often cannot find other sources of loans." In addition, the organization states the fields that received the support of this lends money as follows:

- Supply safe drinking water
- Build schools and train teachers
- Increase agricultural productivity
- Manage forests and other natural resources
- Build and maintain roads, railways, and ports
- Extend telecommunications networks
- Generate and distribute energy
- Expand health care
- Modernize

Works in particular directed projects show the initiative of the World Bank to contribute to the progress of developing countries. As one of the pillars for development of any nation, education has positioned itself as an essential and crucial measurement by adding to a developing nation's growth. On their work Collins and Rhoads (2010, p. 182) expressed:

> In time, we came to center our concern about the relationship between the Bank and universities in the developing world on issues best described as neocolonial and neoliberal, the former conveying new forms of global hegemony advanced by powerful nations and their institutions, and the latter representing an economic ideology by which weaker nations may be brought into greater alignment with global trade initiatives.

Equally, projects around the world have been selected to create an ideal atmosphere for the wellbeing of citizens. The mentality of the projects aims to minimize those factors, in addition to poverty and economic limitations that nurture a lower quality of life.

Raffo, Bliss, Shotten, Sleet and Blanchard (2013) used the road safety project as an example of this mentality as implemented by Argentina in cooperation with the World Bank in promoting a healthier life conditions. At the same time, Stern, Dethier and Rogers said: "Country development aims to promote higher living standards for all, with an emphasis on

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

improved health, education, employment, and people's ability to participate in the economy and society" (as cited in Raffo, Bliss, Shotten, Sleet and Blanchard 2013, p. 20-21).

On its website of the 35 country members, the Organization for Economic Co-operation and Development (OECD) (2018c) states that it "uses its wealth of information on a broad range of topics to help governments foster prosperity and fight poverty through economic growth and financial stability. We help ensure the environmental implications of economic and social development are taken into account." In addition, the OECD's work has included migration issues in cooperation with the Organization of the America States, Economic Organization for Cooperation and Development (2017), as revealed in its report International Migration in The Americas saying:

> Economic migration in the LAC region, driven by labor needs in regional labor markets which transcend national borders, is not a complete one without a mention of what might be called "flight migration", from conflict zones, natural catastrophes or conditions of economic collapse or underdevelopment. (Part I, p. 27).

Under the perspective of the international organization, working in favor of battling a range of difficulties present in developing countries such as poverty or international debt (the former being a reason for people to migrate), as well as, promoting the sustainable development of the welfare of citizens is the core of efforts prompting the work of international assistance. Therefore, for the International Monetary Fund (IMF) (2018):

> Financial assistance has evolved from helping countries deal with short-term trade fluctuations to supporting adjustment and addressing a wide range of balance of payments problems resulting from terms of trade shocks, natural disasters, post-conflict situations, broad economic transition, poverty reduction and economic development, sovereign debt restructuring, and confidence-driven banking and currency crises.

In addition, the United Nations (2014) on its report of the intergovernmental committee explained:

> ODA continues to provide essential financial and technical cooperation to many developing countries, including least developed countries and many African countries, landlocked developing countries, small island developing States, and countries affected

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

by conflict. In most countries with government spending of less than PPP$ 500 per person per year, ODA accounts for an average of more than two thirds of international resource flows (p, 10).

Therefore, efforts and works directed at developing countries is primarily for the development of the countries which, after the necessary negotiation, establish an agreement for work aimed to boost developing country economies in the framework of all settled parameters for the benefit of the population. In its report, the Wall Street Journal (August 30, 2010, para. 1,2) "IMF Expands Loan Offering to Developing Countries" noted that the IMF "would broaden the kinds of loans it offers to encourage a large swath of developing countries to get financial help before they are engulfed in crisis. Under a new "precautionary credit line," countries whose policies it generally endorses."

Currently some critics and changes--as expected--have been observed in the interaction between international organizations and the countries they assist. The boards of the institutions accepted disagreements uncovered with emerging states concerning the processes and applications of the international institutions' objectives. The related proposal of a strong position of new states is made by Qu and Walter who said "China denounced this surveillance framework as discriminatory because, in practice, it left developed countries free from IMF surveillance while making developing countries its primary target" (as cited in Zangl, Heußner, Kruck and Lanzendörfer, 2016, p. 185).

Therefore, the criticism about international assistance is necessary. In the same rhetoric as a supporting role of the work of Qu's and Walter's, Zangl et al. (2016, p. 185) observed "China demanded IMF surveillance practices should target not only developing countries, but also developed countries, including the US and the EU. China criticized the IMF's surveillance of its member states' obligation to guarantee domestic financial stability."

The method of the delivered assistance is also a key point receiving arguments among analysts. The probability of the assurance for a complete success of the methodology of international assistance is not one hundred percent. However, the benefits of economic improvements are evident. Iimi and Ojima (2008) suggested the concessional attachment to ODA loans can augment empirically the recipient economic growth. Developing countries can enter a long-term relation in order to magnify its economy regardless external factors as long as the scope of the loans follows the desired goals.

Other players might interfere or facilitate the attachment of developing countries to international monetary assistance organizations. Aftermath of negative impact in developing

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

countries tip the scale in favor of seeking international assistance. Swamy (2001) analyzed the paper of multinational corporation in developing countries where MNCs transfer highly cost technologies out of proper financial domestic support of developing countries which in turns, creates financial lurch and the force to turn to funding agencies as the International Monetary Fund and the World Bank Group for loans carrying strings attached conditions in detriment of the developing countries.

Perceptions of unwilling turns to international monetary groups in the case of developing countries constitutes a major criticism of those financing organizations because the acuity of an evident boundary between huge capital and international organizations is missed or invisible. Nevertheless, the remunerations of funds in the welfare of people of developing countries is not only isolated for other international actors as it is for the MNCs. Mukherjee (2008) exposed those criticisms which have long suggested the failure of the IMF and the World Bank and the consideration of the cancelation of such international assistance resources. But, at the same time, he affirmed "aid and loans from the IMF and the World Bank have a positive effect on economic development in developing countries that are democracies, but have a negligible or sometimes negative effect on development in developing nations that are autocratic" (Mukherjee, 2008, p. 123).

The weaknesses of Official Development Assistance (ODA) with a focus on the donor side were quantified for Birdsall and Kharas (2010). Through a detailed work, they constructed and implemented the idea of measuring the quality of the ODA with respect to the work of the 23 countries that are members of the Development Assistance Committee (DAC) of the Organization for Economic Co-operation and Development (OECD). The initiative of this investigation is based on the enquiries focused on the scope of the aid and its objectives to improve the quality of life of the people. It also looked at uncertainties about the amount of spending that reaches the beneficiary countries and the amount that of spending that is retained in the donor country, the costs faced by those countries receiving help, the information disclosed (and all details) by the members of the DAC, and mainly if the countries with its bilateral or multilateral agencies show improvement over time. For the authors, the failure of aid projects is due to the poor performance either of both the donor and the executing country or only one of these. In the study, 30 indicators were grouped into four broad categories to focus on the effectiveness of aid or the quality of aid as attributes of the assistance for good development of the quality of life of the people. This study attempted to change the generalized perspective about the quality of aid that has captured the attention of most of the actors over time, namely, that aid depends on quantity and not quality. With the results obtained, it was

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

possible to give a ranking to all the members of the DAC, reaffirming the necessity to improve the methods in which the help is provided. For this reason, the study also included a survey in order to obtain recommendations from donors' responses to provide feedback and recommendations to improve future assistance processes.

Despite criticism about the ODA processes and the quality of its assessment, Lanati and Thiele (2017) investigated the impact of foreign aid on migration. According their study, a direct connection between these two variables does not exist because it is still unexplored. The effects of foreign aid on migration have therefore not yet been determined, which opens the door to further study of the aid-migration link.

The authors expressed the expectations created on migration by ODA disbursement--under the foreign aid term--from a single pattern of study.

The data used for their research corresponded to the Development Assistance Committee (DAC) of the Organization for Economic Co-operation and Development (OECD), which proved a negative relation between the variables.

This finding is congruent to the initial proposed indication of this research, aid should raises wealth levels among the people being influenced by aid, while at the same time, other possible determinants of migration (education, poverty) are minimized and, as a result, aid reduces emigration.

2.6 Regression Line in Social Science

Quantitative approach represents measurable models for accurate analysis. The vast nature of the research fields creates debate among investigators about the most suitable method to undertake such work. However, the debates and differences in opinions cannot be definitely considered as correct or wrong after an exchange of opinions but are questionable under personal intuition. Therefore; in the particular case of linear regression application in social science, the controversy of its use is present but, at the same time, the model has been implemented in research papers.

The application of linear regression is implemented but all too often unappreciated. For Taagepera, "Most numerical results of regression analysis published in social science are dead on arrival: once printed, no one makes any further use of a single number in those tables and equations" (as cited in Taagepera, 2011, p. 73). About this kind of application, the defense of linear model applications was done by Krause (1994) who said James P. McGregor analysis about the use of linear models ignores many trustworthy developments whose strong, scathing

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criticism lead others to believe the absence of positive effects of linear model techniques with a skewed perspective. In addition, Krause exhorted the use of linear and even nonlinear models to embrace more advanced and more distinct approaches for political and social science complexity.

Comments in favor of linear regression are based on the idea that discarding quantitative methods is not entirely possible because of the natural importance of numerical analysis. Regardless of the existence of other approaches in the study of social science, the selection of the methodology is valid for the exploration paper as long as a relationship of all conditions exits. Gerhan (1999, p. 166) proposed that:

> Quantitative analysis plays such a role for students (and other patrons) because it is in the ascendancy in many of their fields of study, not only in the central social sciences of sociology, anthropology, political science, and economics, but also in disciplines often but not always regarded as social scientific, namely history and psychology.

Martinek (2017) elaborated on a review of a series of books aimed at teaching graduate students research methods. In her review, she included five books: *Real Stats: Using Econometrics for Political Science and Public Policy* by Bailey, *Applied Regression Analysis and Generalized Linear Models* by Fox, *Econometric Analysis, 7th Edition* by Greene, *Basic Econometrics, 5th Edition* by Gujarati and Introductory Econometrics: A Modern Approach, 6th Edition by Wooldridge. The variety of techniques correspond to the wide range of knowledge related to social science with a perspective of politics, economics, and others topics under this discipline. Linear models found in these books are part of the consideration for graduate students to contemplate once applying research. The framework of the linear models is not a limitation for broadening and exploring other models. In fact, the review explained the existence of the linear model as part of the whole compendium of possibilities.

Moreover, the expressions about linear regression or least squares are in favor of their usage in the social science field with solid observations. Coskuntuncel (2013, p. 2151) commented:

> In scientific research projects, finding a relationship between two or more variables and then expressing it in a mathematical equation is an important dimension. Regression analysis has an important role in scientific research projects because it allows a researcher

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

to predict the future. It is often assumed in the social sciences that data conform to a normal distribution.

The interdependence of variables internationally demonstrates the correlation that exists because social interaction is not secluded. Continuous contact among actors tie one action to another in a taciturn system. As expressed by Signorino, “traditionally, international politics has been defined as the scope and extent of the relations among independent countries, thought to be the most important elements in world politics. This means that actors as well as their actions are strategically interdependent” (as cited in Hoff and Ward, 2004, p. 161).

Measures connecting democracy are part of the international affairs area. Analyzing them with linear regression to establish the relation between some variables is significant. Kedzie's paper tested “the dictator’s dilemma hypothesis by using linear regression to compare the strength of traditional predictors of democracy including economic development and education, human development and health, ethnicity and culture” (as cited in Best and Wade 2009, p. 256).

The findings of linear model cases are readily at hand. Social capital and health were studied under linear regression by Baheiraei, Bakouei, Mohammadi, Majdzadeh and Hosseni (2016, p. 8) who established that for: “the 'relationship between social capital and health status of reproductive-age women', the linear regression models considered all dimensions of social capital and socio-demographic factors as independent variables and all dimensions of health as dependent variables.”

Analysis of domestic growth in relation to unemployment in Kosovo was conducted to establish a relation between the two parameters related to the situation in the country. A paper by Misini and Badivuku-Pantina (2017 p. 5) scrutinized the dependence of social factors using scatter plot graph analysis between nominal GDP in relation to unemployment, stating "Then, the analysis of descriptive statistics will be included, and in the end the method of simple linear regression will be used comparing unemployment and nominal GDP”.

Another case of linear application conducted by Wong, Palloni and Soldo (2007) referred to the role of wealth in Mexico's old age population and international migration and using a basic regression approach, they considered that observed factors can be captured and measured with respect to migration, age, and wealth. Accounting for the aspects influencing migration, a model was developed for a complex study.

Meanwhile, for Jokela, Elovainio, Kivimaki and Keltikangas-Jarvinen (2008) international migration was found to relate to temperament in Finland. Among the dense analysis tools, a regression line was part of the research. They were able to complete an intense

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

and extended analysis of temperament and migration in Finland while assessing different variables under different approaches. In their paper they assessed the relationship between the two variables under the linear regression model for the migration distance under the temperament scale among the participants for the corresponding research period.

Finally, in the Latin American region, immigration might have multiple influencers. Characterized by individual and country differences, the application of linear regression is fundamental for the addition of further theories. The study of Zaman and Shamsuddin (2018, p. 617) proved this by concluding "the linear and non-linear relationships between growth, inequality, poverty, and non-poverty measures in a panel of 18 selected Latin America and the Caribbean countries by utilizing the different household available surveys for the periods of 1981–2012."

2.7 Economy as Gross Domestic Product GDP

The cause of migration due to low Gross Domestic Product (GDP) can be thought in an inverse relationship. A strong good indicator in the form of GPD can pull or incentivize the flow of migrants. Better GDP performance can ignite the motivation and determination of people to move to a foreign country.

The impact that migration has on the economy is mutually beneficial for both receiving country and the origin country of migration as earlier proposed. Literature about this topic emphasizes the positive effects that are observed as consequence of migration in receiving nations particularly those of the Organization for Economic Cooperation and Development.

In its document, the Organization for Economic Co-operation and Development (2014) pointed out the benefits of migration for the economy of receiving countries within three key factors: an increase in labor markets of 47 percent and 70 percent for United States and Europe, respectively, came from migrants over the past ten years especially for declining and niche sectors; the benefits of migrants are less than the tax and social contributions they made with a positive impact to the public purse; technology progress is real on economic growth as well as human capital development with skilled migrants.

For the organization, an assumption is deducted regarding a good economy performance represented in the GDP amount. According to the same report, a developed economy is an incentive for and attracts migrants since the well-being of people is experienced in terms of economic stability and such stability is achieved through the complement of migrants' work. The involvement of migrants in the OECD countries is seen as a positive contribution for

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economic growth through employment. The fiscal integration of migration, which plays a significant role in the labour market, provides support to the dynamic economic sectors.

The Wharton School of the University of Pennsylvania (2013) inquired into the relationship effect between migration and GDP. In accordance to the article arguments, the results of the involvement of migrants in economic activities are positive. It is mentioned that both skilled professional and poor immigrants are attracted to OECD countries due to their job prospects. Similarly, employment represents a window for employed migrants, in the same level or conditions as natives, who contributed to a raise in GDP between 0.5 percent and 1.3 percent in some countries.

As mentioned in this report, prejudice about migration should be overcome while focusing more on the benefits migration has for GDP growth. From the articles, the conclusion of the linkage between GDP and migration is valid as it is valid to infer that migration succumbs to the influence of strong and weak GDP.

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

Chapter 3: Methodology

The methodology includes information relevant to the research work being carried out. It will include sections such as: the research strategy, the research approach, the collection of information, the limitations of research, and the analysis of data.

3.1 Research Strategy

As many other researchers have done, the use of techniques to check and conduct research is well known and has sufficient basis in previous research. The implemented strategy related to migration and international assistance by world organizations is focused on the country of Nicaragua. I have selected a quantitative approach because both migration and international monetary assistance variables can be quantified and the number represents a visual understanding of the impact they have on Nicaraguan society.

At the same time, by using a quantitative method, we can accept or reject the possibility that international assistance is a determining factor for migration present in Nicaraguan territory. In addition, quantifying values allows us to analyze the current circumstances that affect the specific variable for this research and at the same time propose results that can serve as an incentive for future projections of migration and the use of international disbursements for Nicaragua. Quantitative methodology most commonly features a clarification of the analysis to be used and a projection of possible outcomes, the gathering and analysis of standardized data, the testing of underlying hypotheses, and inferences to be drawn from the outcome of such analysis (Burke Johnson and Onwuegbuzie, 2004).

3.2 Research Approach

At the beginning of this document, I established my curiosity to know if the reality of migration in Nicaragua can be determined, influenced, or proportionated based on the levels of international disbursements by global organs through loans received and controlled with its corresponding implementations by the governmental authorities of Nicaragua. The use of a deductive method creates a direct impact to the realization of tangible figures, which are institutionally available in correspondence to the requirement of the research implementation. Thus, a deductive approach goes hand in hand and works perfectly when establishing a hypothesis and quantifying it through measurements of the factors under analysis. However, when promulgating a thesis, it is necessary to undertake an analysis of the numbers in order to

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

be able to reject or accept the possibility of the relationship between these variables. A deductive method creates the guideline to carry out this research, but it does not determine the results that will be obtained through the process. It can be a validation or rejection of the hypothesis but it does not disqualify the intrinsic value of the work that is performed.

3.3 Data Collection

In order to use the information that best fits the research hypothesis, the official data to be used will cover the complete history for the migration in Nicaragua, the funds provided by international organizations and the gross domestic product per capita. The veracity of these data rest on the importance, relevance, and influence of international organizations such as the World Bank, International Monetary Fund, and the United Nations, either in their databases or through structures, institutions, and agencies that carry out work for large organizations and have the data recapitulation related to the mobilization of people, international cooperation funds and gross domestic product.

In this way, indicators of the World Bank and of the United Nations through the organization for migration, represent the most accurate source of data for the realization of this document. Nevertheless, other sources will be consulted if necessary.

3.4 Research Limitations

The realization of this research work faces the following limitations:

1) Geographical position: The researcher's geographical position limits mobilization towards Nicaragua, which is the central objective of the analysis.
2) Economic resources: Limited economic resources constrain the possibility for expanding the scope of the work to be covered.
3) Access to information: The lack of a transparent procedure to obtain and corroborate both the migration numbers and the international disbursements in the corresponding government institutions limits the verification that these figures are 100% accurate and reliable.

3.5 Data Analysis

I selected linear regression to carry out the study of the hypothesis that states there is a possible impact on Nicaragua migration from assistance in the form of loans granted to

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Nicaragua in order to convert the low economic levels in the country, promote the growth of the nation, and the development of citizens' quality of life.

A simple linear regression model is significantly important as the first step in a framework to begin the research in to the relationship between migration an international assistant. Calculations by hand could be conducted; however, utilizing statistical software will help produce more accurate numbers and minimize the amount of time taken. The model will be used to obtain results about the relationship between the two selected variables: net migration and international assistance in the form of national loans for Nicaragua.

The linear regression section describes the notions needed to generally understand the theory behind the concepts of the mathematical and statistical fields. Stata software will be employed to obtain the results of the methodology. In other words, the linear regression will introduce the methodology, which will be applied through the Stata software in order to achieve results to propose final conclusions for this research.

3.5.1 Simple Linear Retrogression

A linear regression is a fundamental tool in mathematical studies in which it is intended to quantify the possible relationship between correlated variables. Normally, one of these variables has an impact effect on the behavior of another variable.

Through the linear regressions, we can determine whether or not this effect exists and the degree of effect. Indeed, the use of linear regression analysis can quantitatively express possible correlations between sample objects and compare our projected correlation to the observed relationship. The ANOVA outcome table assists in the examination of a projected relationship between the dependent and independent variable as well as to determine the cogency of such a relationship (Isobe, Feigelson, Akritas and Babu, 1990). The different concepts for the understanding of the results work as a complete system.

The ANOVA table, which represents the summary of the linear regression concepts, urges the necessary understanding of such fundamentals. Lind, Marchal and Wathen (2012) synthesized the concepts for the linear regression model. A primary explanation of these authors concepts are encompassed under section 3.5.1 and 3.5.2 which includes several concepts beginning with the scatter diagram (shown in figure 4), which helps to graphically demonstrate the relationship between dependent and independent variables studied. We plot the estimated variable, here the dependent variable, on the Y-axis and the predator, here the independent variable, on the X axis.

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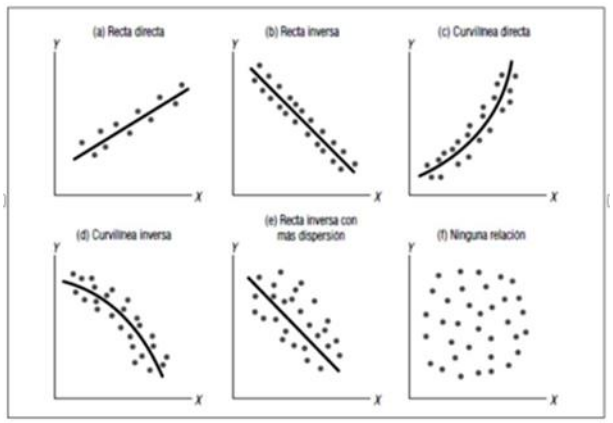

Figure 4. Scatter diagram plot-Variables relationship. Adopted from "Inferencia estadistica Modulo de regression lineal simple," by Maradiaga, C.F.D., Rodriguez, G.L.J., Lozano, R.M. and Vallejo, C.E., 2013, Retrieved from https://www.researchgate.net/publication/298431518_Inferencia_estad'istica-Modulo_de_regresion_lineal_simple

The correlation coefficient measures the strength of the linear association between two variables with a range from negative 1.00 to positive 1.00. A correlation between the two variables of zero infers no association between them, while a value of positive 1.00 indicates a perfect positive correlation and negative 1.00 a perfect negative correlation. Therefore, a positive sign indicates a direct relationship between the variables, and a negative sign an inverse relationship (Lind et al., 2012).

Regression analysis estimates one variable based on another variable with the variable being estimated is the dependent variable and the variable used to make the estimate or predict the value is the independent variable. The least squares regression line is of the form Y hat = a + bX, where Y hat is the estimated value of Y for a selected value of X, a is the constant or intercept (it is the value of Y hat when X = 0) and b is the slope of the fitted line. The line shows the amount of change in Y hat for a change of one unit in X, where a positive value indicates the relationship between the two variables and a negative value indicates an inverse relationship. The sign of b and the sign of r, the correlation coefficient, are always the same. X is the value of the independent variable (Lind et al., 2012).

Then, Lind et al. (2012) explained that for a regression equation, the slope is tested for significance under the hypothesis that the slope of the line of the population is zero. If we do not reject the null hypothesis, we conclude there is no relationship between the two variables. The test is equivalent to the test for the correlation coefficient. The standard error of estimate measures of the variation around the regression line (see figure 5) and is in the same units as the variable. It is based on the square deviation from the regression line. Small error indicates that the cluster points closely about the regression line

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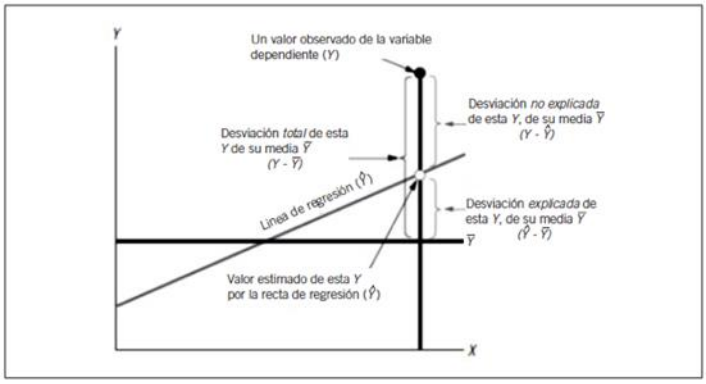

Figure 5. Deviation from the regression line. Adopted from "Inferencia estadistica Modulo de regression lineal simple," by Maradiaga, C.F.D., Rodriguez, G.L.J., Lozano, R.M. and Vallejo, C.E., 2013, Retrieved from https://www.researchgate.net/publication/298431518_Inferencia_estad'istica-Modulo_de_regresion_lineal_simple

The coefficient of determination is the proportion of that variation of a dependent variable explained by the independent variable and ranges from 0 to 1.0. It is the square of the correlation coefficient. In the confidence interval, the mean value of Y is estimated for a given value of X.

3.5.2 Multiple Linear Retrogression Analysis

The outcome from the application of Stata software represents the presiding explanations without showing all the mathematical calculations. A synthetized interpretation for the multiple regression is provided in the following section.

The multiple linear regression follows the same pattern and logic as the simple linear regression. Therefore, the understanding of the simple linear regression embodies the basic structure for the comprehension of the second phase or multiple linear regression analysis. The result of the regression model consists of three sections: the ANOVA table, model summary, and coefficient table (Lind et al., 2012).

The ANOVA table includes the results of the calculations using observations of the dependent variable, where: Model SS (Sum of squares) equates to the sum of estimated values of the independent variable minus its mean to the square, Residual SS (Sum of squares) equates to the sum of actual values of the dependent variable minus the estimated value of the dependent variable to the square, and Total SS (Sum of squares) equates to the sum of actual values of the dependent variable minus its mean to the square (Model SS plus Residual SS). Model of degree of freedom equates to the number of independent variables, Residual of the degree of freedom is the sample size minus one, minus the number of independent variables,

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

Moreover, total degree of freedom is the sample size minus one. Also, the model MS (Mean of squares) is model SS divided by model df, Residual MS (Mean of squares) is the residual SS divided by residual df, and Total MS (Mean of squares) is the total SS divided by total df (Lind et al., 2012).

Then, the model summary is used to calculate the F value, such that F value and Probability > F are used to reject the null hypothesis. F value is calculated by Model MS divided by Residual MS. In order to reject the null hypothesis, F should be relatively large. Probability > F is calculated by the p value, which indicates the reliability in predicting the dependent variable and the statistical significant of the relationship between the independent and dependent variable. Either F value or Probability > F are compared to the critical value or significance level in order to reject the null hypothesis (where all coefficients of the regression are zero). If the null hypothesis is rejected then at least one of the independent variables can explain the variation of the dependent variable. A 0.05 significance level is usually implemented. R-squared is the contributed percentage in determining the variation on the dependent variable by the independent variables. Adjusted R-squared is calculated to avoid the inflated value of R-squared and is related to the number of observations in the sample size and the number of independent variables. As the number of observations decrease with a large number of independent variables, the risk of inflated R-squared is higher (Lind et al., 2012).

The Root MSE is the multiple standard error of estimate and is a comparative value. It is the standard deviation of the regression model--the closer to zero the better--and is used to create an interval with normal distribution. The units are equal to the dependent variable unit. Once calculated, 68% of residuals (which is the difference between actual values minus estimated values using the regression equation) will be within ± the Root MSE value. 95 percent will be between +- two times the Root MSE value. Root MSE or multiple standard error of estimates is similar to the standard error of estimates for linear regression but without creating an interval for the estimated values after using the equation to predict these values (Lind et al., 2012).

Finally, the so called coefficient table is the proportion of change in the dependent variable in respect to the independent variable. It can have a positive or negative relation. As the independent variable increases by one unit, so does the dependent variable in correspondence to the coefficient of that independent predictor. The standard error is the deviation present on the coefficient of the independent variables and is used to calculate t values, where t value and p-value are the essential key points. Contrasting them to the significance level (or critical value) the null hypothesis will be rejected or not rejected. Individual t and p-values are observed in

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order to determine which independent variables have no effect as a predictor on the dependent variable. The confidence interval is the value within which the coefficients are located. They provide a range due to possible variation (Lind et al., 2012).

3.5.3 Stata Software

A range of statistical software has appeared over the last decade. As technology has advanced, so too has this variety of computer software. In this way, the gap has greatly reduced between the number of mathematical calculations and their original time-consuming burden. With the ease of use for statistical software, analysis--particularly in the case of linear regression--has become available for multiple applications and with a high tendency to be the primary option for use in research. More modern methods of quantitative analysis and social research supported by increasingly advanced software applications have greatly reduced the applicability or usefulness of older analytical techniques taught in doctoral training (Jenson, 2008).

The perception of an increasing propensity to select computer software for analysis in recent years is real. The market now offers different software options for selection based on the needs, investigation goals, or preferences of research. Commercially available software suites have played a fundamental role supporting quantitative analysis in the academic field for many years now, including SPSS (SPSS Inc., 2011), SAS (SAS Institute, 2012), and Stata (2013) (Harwell, 2014).

In the case of the regression line, personally I consider Stata to be an adequate software tool with simplicity and a user-friendly interface. Despite some cons, Stata has proven that it works quite adequately on linear regression analysis. While it could be said that Stata is relatively weak on ANOVA with regards to statistical analysis and mediocre at best for factor analysis, it has shown itself to be very strong when utilized in regression analysis, complex survey designs, and limited dependent variables (Acock, 2005).

Stata has been in the market for quite several decades now, during which time it achieved continuous expansion and improvement for statistical analysis. Stata provides a comprehensive, integrated software suite for statistical analysis, offering fast, accurate, and easy use through its point-and-click interface and strongly intuitive command interface that allows its application in economics, education, finance, business, and political science (STATA, 2018b). Moreover, once commands are input and operations selected, the results are immediately displayed for the user to review (see figure 6).

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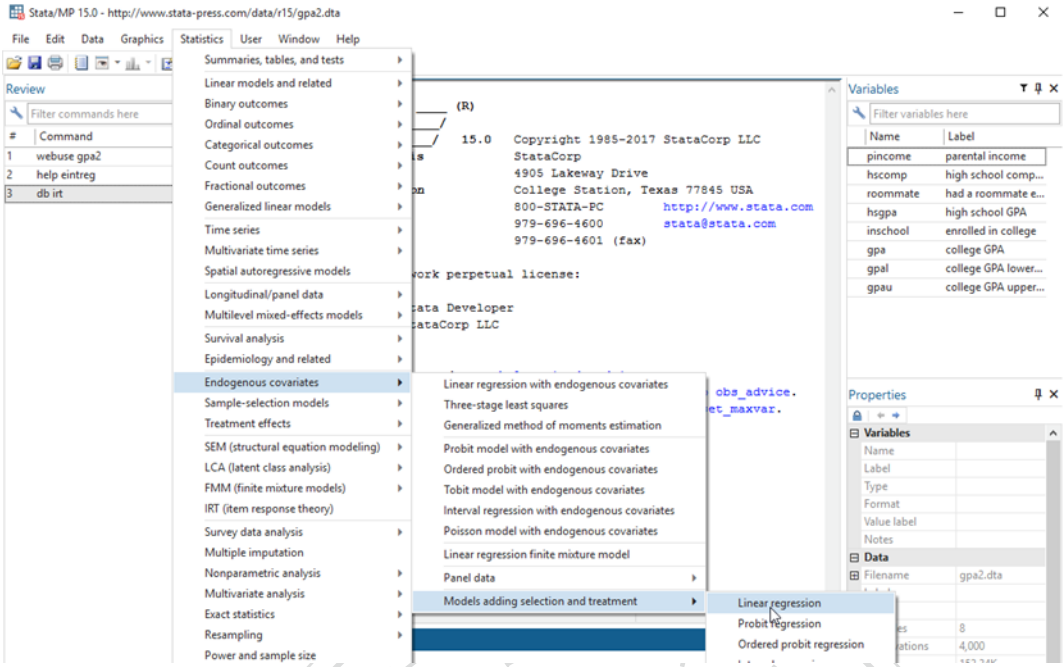

Figure 6. STATA interface. Adopted from "STATA," 2018b, Retrieved from https://www.stata.com/why-use-stata/

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

For Bollen Stata's performance comes from assumptions based on theoretical concepts and structural models, wherein the associated between the parameters given are not descripted in nature but are causal (as cited in STATA manual, n.d). Following this definition, we can state that the measurement models given above are structural models, as too is the linear regression seen in figure 7 below. Based on this notion and in order to come up with the computer results for linear regression, basic models are necessary to obtain the interaction and outcomes from STATA as the example in figure 8 shows.

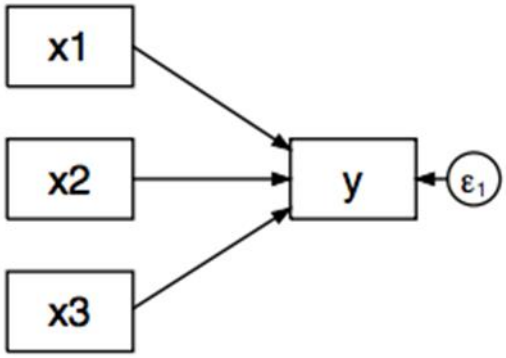

Figure 7. Variables relationship, Linear structure model. Adopted from "STATA Structural models 1 Linear regression. STATA manual," by STATA, n.d., Retrieved from https://www.stata.com/manuals/semintro5.pdf

```
. webuse auto
(1978 Automobile Data)

. regress price weight foreign##c.mpg

      Source |       SS       df       MS              Number of obs =      74
-------------+------------------------------           F(  4,    69) =   21.22
       Model |  350319665      4  87579916.3            Prob > F      =  0.0000
    Residual |  284745731     69  4126749.72            R-squared     =  0.5516
-------------+------------------------------           Adj R-squared =  0.5256
       Total |  635065396     73  8699525.97            Root MSE      =  2031.4

------------------------------------------------------------------------------
       price |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      weight |   4.613589   .7254961     6.36   0.000     3.166263    6.060914
             |
     foreign |
     Foreign |   11240.33   2751.681     4.08   0.000     5750.878    16729.78
         mpg |   263.1875   110.7961     2.38   0.020     42.15527    484.2197
             |
foreign#c.mpg |
     Foreign |  -307.2166   108.5307    -2.83   0.006    -523.7294   -90.70368
             |
       _cons |  -14449.58    4425.72    -3.26   0.002    -23278.65   -5620.51
------------------------------------------------------------------------------
```

Figure 8: STATA software outcome. Adopted from "STATA features linear regression," by STATA, 2018, Retrieved from https://www.stata.com/features/overview/linear-regression-and-influence/

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

After running STATA with the corresponding selected data relating to migration and international assistance for Nicaragua, results will be presented in a format similar to the one in the previous image. The outcome of the figure 8 is a summary of the described concepts on the subsections of this chapter.

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Chapter 4: Results

Chapter 4 focuses on the development and analysis of the collected data regarding the three variables corresponding to: 'NET ODA' and 'GDP per capita' as predictors of 'Net migration in Nicaragua'. The data collection presented restrictions because the consulted sources did not provide all the completed information necessary to study the interaction of these three variables. Nevertheless, all data is up to date and the sources presented similarities to proceed to the analysis of the figures (see Appendix 1).

The information related to total migration was collected from the World Bank (2018c) website. The first quantification of migration that could be identified was for year 1962. Starting this year, assessed periods of five years were identified. The last evaluation for net migration corresponds to the year 2017 (Appendix 2, Figure 17). During this period, 12 observations with negative values can be counted. Positive numbers in the observations would indicate that the number of migrants who entered and settled in Nicaragua is greater than the number of nationals who left the country. By the same logic, negative values for each of the observations indicate that the number of Nicaraguans who left the country is higher than the number of foreigners who settled in the national territory.

Due to net migration being the dependent variable that presents the lowest number of observations, the variable becomes the bottleneck of this quantitative analysis research with both simple and multilinear regression systems.

As for Net ODA per capita, the data was extracted from the World Bank (2018d) website. The data correspond to the years between 1960 and 2016 (Appendix 2, Figure 18). The quantification of the official assistance received in Nicaragua corresponding to the year 2017 is not currently available. The lack of information for the year 2017 forced us to eliminate from the study the observations of all other variables for year 2017.

The Gross Domestic Product per capita data are partially available on the official website of the World Bank (2018b). We discovered that the database is limited to the period from 1989 to 2017 (Appendix 2, Figure 19). An alternative complementation was indispensable to successfully supplement the data period from 1962 to 1988. In order to achieve the objectives of this research, and since the observations in the population are a small amount, the basic complementation was a correct step in the data collection to match the 1962-2017 period, which includes the transcendental number of observations of the bottleneck variable.

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Therefore, in order to maximize the use of information by expanding the investigation for information sources, we managed to find the data before the year 1989 on the IndexMundi website. GDP per capita current was obtained by dividing GDP current by total population. Therefore, the GDP per capita current was calculated using the information for the Gross Domestic Product current (Spanish acronym: PIB) from the IndexMundi (2017) website as well as the information of the population indicator shown on the (2018e) website. Once the data were compared and processed, the GDP per capita current for the period 1960 to 1988 of Nicaragua was derived dividing Gross Domestic Product current by the total number of the population.

After verifying the provided data in these websites as well as the calculations, we integrated the information to proceed with the application of the computerized methodology. The raw data for Gross Domestic Product current, GDP per capita, population, net migration, and net ODA per capita, including all related graphs can be found in the appendix section equaling a 56-year period. The summary of the data entered in to the Stata Software is reflected in this chapter.

4.1 Simple Linear Regression Interpretation

As a first step, we proceeded to run a simple linear regression using the dependent variable Net migration and the independent variable Net ODA per capita. The data for these variables correspond to 12 observations found in the period 1962 to 2017. The last observation was omitted from this study since of the Net ODA per capita for the year 2017 is not available.

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The Excel table (Table 1) reflects the 12 observations of the independent and dependent variables for the period 1962-2017 including the missing sample of year 2017 for net ODA per capita.

Table 1. Collected Data summary for linear regressions

Year	GDP per capita	NET ODA per capita	NET Migration
1962	142.74	3.76	14,003
1967	300.08	7.52	18,997
1972	344.57	5.33	37,999
1977	748.87	12.23	58,001
1982	714.45	34.93	110,002
1987	991.83	37.18	150,001
1992	413.92	150.85	120,001
1997	917.13	86.26	145,000
2002	1,010.15	100.04	173,998
2007	1,344.30	151.63	155,000
2012	1,792.04	90.58	135,000
2017	2,221.80	N.A.	106,342

The net migration variable once again represents the main constraint for the reduced number of observations. When applying the STATA program, we obtained the following results, where 11 observations were included in the model.

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```
. regress NETMigration NETODApercapita
```

Source	SS	df	MS	Number of obs	=	11
				F(1, 9)	=	12.05
Model	1.9626e+10	1	1.9626e+10	Prob > F	=	0.0070
Residual	1.4661e+10	9	1.6290e+09	R-squared	=	0.5724
				Adj R-squared	=	0.5249
Total	3.4286e+10	10	3.4286e+09	Root MSE	=	40360

NETMigration	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
NETODApercapita	780.9769	224.9997	3.47	0.007	271.9922	1289.962
_cons	53335.88	18485.87	2.89	0.018	11517.93	95153.84

```
. pwcorr NETMigration NETODApercapita
```

	NETMig~n	NETODA~a
NETMigration	1.0000	
NETODAperc~a	0.7566	1.0000

Figure 9. Simple linear regression outcome

The F probability is 0.007, which indicates that the R squares are different from zero. Since the F probability is less than 0.01 with a 99 percent confidence we can be assured that the system about the relation of the variables is valid. At the same time, we can be assured that the independent variable explains the 57.24 percentage for change or variation in the dependent variable. In addition, when looking at the graph, we can conclude that the relationship between the variables is positive because the slope is strong since the Pearson coefficient or correlation coefficient equals 0.7566. We are led therefore to assume that as net ODA per capita increases so does net migration.

In addition, due to the slope inclination and observing the probability t of the independent variable, we can affirm that the equation is valid as a future predictor when using it. This is because the t probabilities equivalent to 0.007 for the independent variable and 0.018 for the constant indicate the coefficients are different from zero. The constant 53335.88 corresponds to the number of migrants which would be observed if the value of the independent variable was zero.

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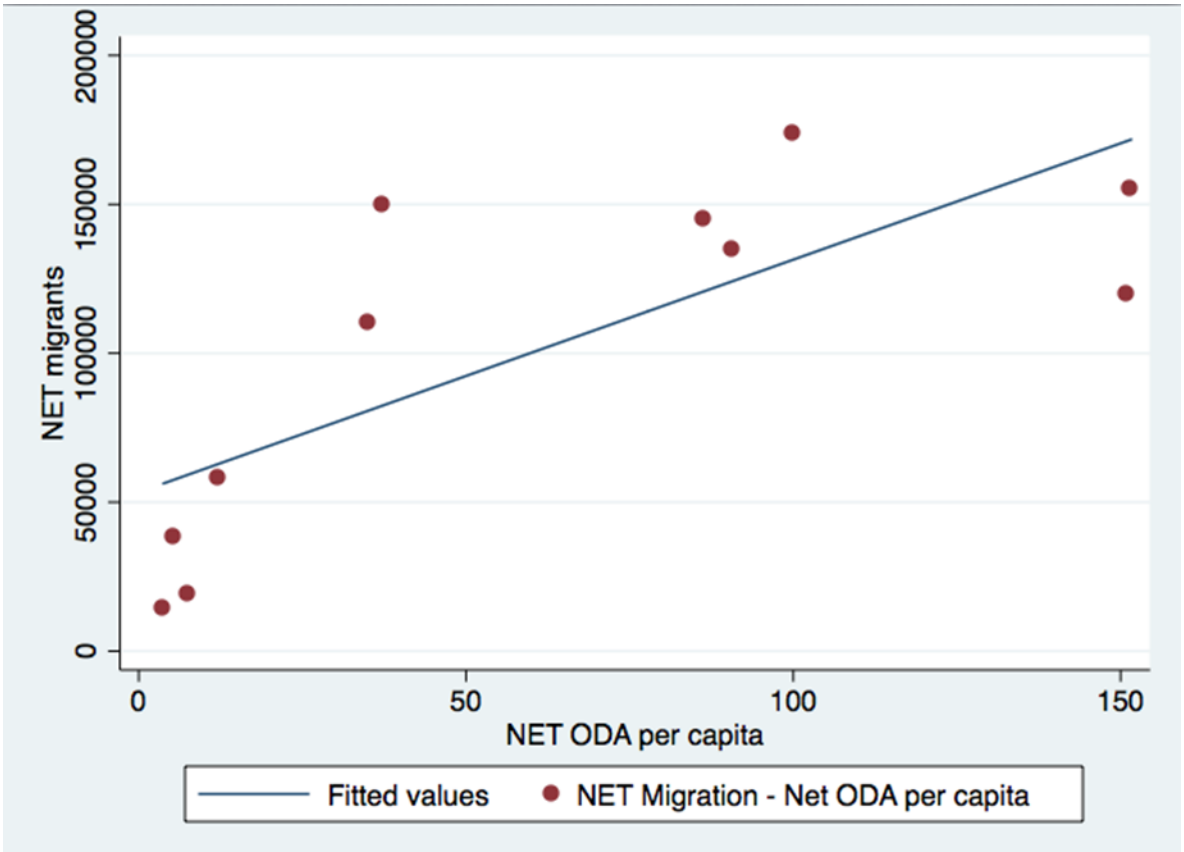

Figure 10. Scatter diagram, Net migration - Net ODA per capita

Proceeding from the Stata result, we are able to derive the formula for the simple regression line as:

Y hat = 53335.88 + 780.9769X1

Conforming to these conditions, the null hypothesis is rejected. Therefore, the alternative hypothesis is not rejected and thus, we can say Net ODA per capita is a good predictor for Net migration in Nicaragua.

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4.2 Multiple Linear Regression Interpretations

The starting point of this research reflected in the simple linear regression, when Net ODA per capita is considered as a predictor for Nicaraguan net migration, opens the alternative decision to add one or more variables that might also be thought as valid determinants for the migration phenomenon of Nicaragua. Consequently, we added a new independent variable to the model to corroborate whether the results of the original relationship in the simple linear regression would be upheld or if the multiple regression would yield a new result.

The multiple linear regression helps to broaden the range of the study by eliminating restrictions for several possible predictors while connecting them to the dependent variables. After implementing Stata software with two independent variables: Net ODA per capita and GDP per capita as predictors of Net migration, we drew the following results:

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```
. pwcorr NETMigration NETODApercapita GDPpercapita

             | NETMig~n NETODA~a GDPper~a
-------------+---------------------------
NETMigration |   1.0000
NETODAperc~a |   0.7566   1.0000
GDPpercapita |   0.7426   0.5196   1.0000

.
.
.
. regress NETMigration NETODApercapita GDPpercapita

      Source |       SS           df       MS      Number of obs   =        11
-------------+----------------------------------   F(2, 8)         =     11.37
       Model |  2.5362e+10         2  1.2681e+10   Prob > F        =    0.0046
    Residual |  8.9248e+09         8  1.1156e+09   R-squared       =    0.7397
-------------+----------------------------------   Adj R-squared   =    0.6746
       Total |  3.4286e+10        10  3.4286e+09   Root MSE        =     33401

------------------------------------------------------------------------------
  NETMigration |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
---------------+--------------------------------------------------------------
NETODApercapita |   524.2178   217.9273     2.41   0.043     21.67644    1026.759
  GDPpercapita |   56.94742   25.11454     2.27   0.053    -.9668131    114.8616
         _cons |   24071.42   20014.91     1.20   0.263    -22083.04    70225.88
------------------------------------------------------------------------------

. test NETODApercapita GDPpercapita

 ( 1)  NETODApercapita = 0
 ( 2)  GDPpercapita = 0

       F(  2,     8) =   11.37
            Prob > F =    0.0046
```

Figure 11. Multiple linear regression outcome

The F probability of the regression is 0.0046, which means that with a 99% confidence we can be assured that the multiple system is valid for the study of Net migration as a dependent variable under the two independent variables: Net ODA per capita and GPD per capita. In other words, at least one of the coefficients of the independent variables is different from zero. Variation explained in the dependent variable by the predictors corresponds to 73.97 percentage under the R-squared. The same number of observations are incorporated in the multiple system: 11 observations, 2 covariances (degrees of freedom equivalent to independent variables) and 8 degree of freedom for residuals.

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Regarding the coefficients of the predictors, we can infer that Net migration would increase in around 524 migrants as Net ODA per capita increases by one unit holding the other variable constant. If the coefficients of both variables were zero, Net migration would be approximately 24,071 migrants. In the same sense, Net migrant would be increased in around 56 migrants if GDP per capita also increases by one unit. According to the values of t probabilities, which are 0.043 for Net ODA per capita and 0.053 for GPD per capita respectively, we can state that the coefficients of the predictors are different from zero and so, they are good indicators for studying Net migration. Net ODA per capita has a lower probability, which represents a better influencer for predicting Net migration.

Both of the independent variables and the dependent one showed a positive strong relationship: Net ODA per capita to Net migration is 0.756 and GDP per capita to Net migration is 0.7426, and the closer to 1 the stronger the relationship.

Finally, the equation for the multiple linear regression model is:

$$\text{Y hat} = 24071.42 + 524.2178X1 + 56.94742X2$$

The null hypothesis is rejected. The independent variables are good predictors for the total migration of Nicaragua. At least one of the coefficients is different from zero.

4.3 Simple Linear Regression with Larger Size in Observations

In most of the cases, a number of observations less than 30 creates doubts about the reliability of the model to predict the values of the dependent variable as well as it motivates people to assume there is a high error margin leading to bias in the model. In order to manage this situation, after extensive research, I discovered a database related to Nicaragua net migration in The United States Census Bureau (2019) website. The data shows estimates of the net migration of Nicaragua per year. According to the United States Census Bureau (2013), the experts of the office incorporate and work with all possible available data from sources which includes the Unites Nations, the World Bank, the Office for Economic and Co-operation for Development among others. The bureau offices explain that a complete accurate information regarding migration is difficult to find because of the lack of existing information and the poor records regarding people mobilization. The U.S. Census Bureau complements the available data to provide users with more comprehensive information.

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Therefore, the data for Nicaragua net migration in the U.S. Census Bureau shows both a rate of net migration and net migration per thousands. However, after studying the numbers, I was able to observe that the table corresponding to migration is decimal-rounded. The number of net migrants is expressed in thousands and repetitive in consecutive years. This can create a steady slope once the linear regression is implemented. In order to minimize this situation, I proceeded to calculate not rounded amounts of migrants, dividing the Nicaragua net migration rate by 1000 and multiplying it by the midyear population. The result of the calculations are represented in the following table 2:

Table 2. Nicaragua net migration rate and midyear population

Year	Net Migration Rate	Midyear Population	Calculated Net Migration
1971	-2	2,120,000	-4240
1972	-2	2,183,000	-4366
1973	-2	2,248,000	-4496
1974	-2	2,320,000	-4640
1975	-2	2,395,000	-4790
1976	-2	2,473,000	-4946
1977	-2	2,554,000	-5108
1978	-25	2,608,000	-65200
1979	-15	2,687,000	-40305
1980	1	2,803,000	2803
1981	-2	2,899,000	-5798
1982	-13	2,976,000	-38688
1983	-9	3,044,000	-27396
1984	-11	3,114,000	-34254
1985	-12	3,180,000	-38160
1986	-10	3,248,000	-32480
1987	-8	3,322,000	-26576
1988	-6	3,404,000	-20424
1989	-4	3,492,000	-13968
1990	26	3,644,000	94744
1991	14	3,839,000	53746

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1992	5	4,007,000	20035
1993	2	4,156,000	8312
1994	-2	4,289,000	-8578
1995	-5	4,402,000	-22010
1996	-5	4,503,000	-22515
1997	-5	4,598,000	-22990
1998	-5	4,689,000	-23445
1999	-5	4,778,000	-23890
2000	-5	4,866,000	-24330
2001	-5	4,952,000	-24760
2002	-5	5,036,000	-25180
2003	-5	5,116,000	-25580
2004	-5	5,193,000	-25965
2005	-4	5,267,000	-21068
2006	-4	5,338,000	-21352
2007	-4	5,408,000	-21632
2008	-4	5,476,000	-21904
2009	-4	5,541,000	-22164
2010	-4	5,604,000	-22416
2011	-4	5,666,000	-22664
2012	-3	5,728,000	-17184
2013	-3	5,789,000	-17367
2014	-3	5,849,000	-17547
2015	-3	5,908,000	-17724
2016	-3	5,967,000	-17901
2017	-3	6,026,000	-18078

Note. US Census Bureau 2019. Retrieved from https://www.census.gov/data-tools/demo/idb/region.php?N=%20Results%20&T=13&A=separate&RT=0&Y=1970,1971,1972,1973,1974,1975,1976,1977,1978,1979,1980,1981,1982,1983,1984,1985,1986,1987,1988,1989,1990,1991,1992,1993,1994&R=-1&C=NU

As we can see, the data from the U.S. Census bureau includes the period 1971 to 2017. The office also provides projections up to year 2050. Again a simple linear regression with the independent variable Net ODA and the dependent variable Net migration will be run now

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

replacing the net migration of the World Bank data with the information found in the U.S. Census Bureau.

```
. pwcorr NetMigrationUSCensus NETODApercapita

             | N~USCe~s NETODA~a
-------------+------------------
NetM~SCensus |   1.0000
NETODAperc~a |   0.0899   1.0000

. regress NetMigrationUSCensus NETODApercapita

      Source |       SS           df       MS      Number of obs   =        46
-------------+----------------------------------   F(1, 44)        =      0.36
       Model |  211635467          1  211635467    Prob > F        =    0.5524
    Residual |  2.5978e+10        44  590411157    R-squared       =    0.0081
-------------+----------------------------------   Adj R-squared   =   -0.0145
       Total |  2.6190e+10        45  581993920    Root MSE        =     24298

------------------------------------------------------------------------------
NetMigrationU~s |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
----------------+------------------------------------------------------------
NETODApercapita |     36.4886    60.9453     0.60   0.552    -86.33859    159.3158
          _cons |    -18088.5   6389.579    -2.83   0.007    -30965.85   -5211.15
------------------------------------------------------------------------------
```

Figure 12. Simple regression Net Migration - Net ODA 1971-2016 outcome

As we can see, the F probability in the model of 46 observations has to be rejected since the value is higher that 0.1, this is to say, we must conclude that the R square is not different from zero predicting less than 1 percent of the variability of the dependent variable explained by the independent one. Also, we can observe a 0.089 weak strength in the Pearson coefficient, which validates the conception that the model is not very good to link the dependent and independent variables.

The coefficient of Net ODA is equal to zero since the t probability is higher that 0.01. But it is interesting to notice that in a hypothetical case where the model was accepted, as Net ODA increases, the number of migrants should decrease. We cannot validate and accept the simple regression as appreciated in the regression line below:

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

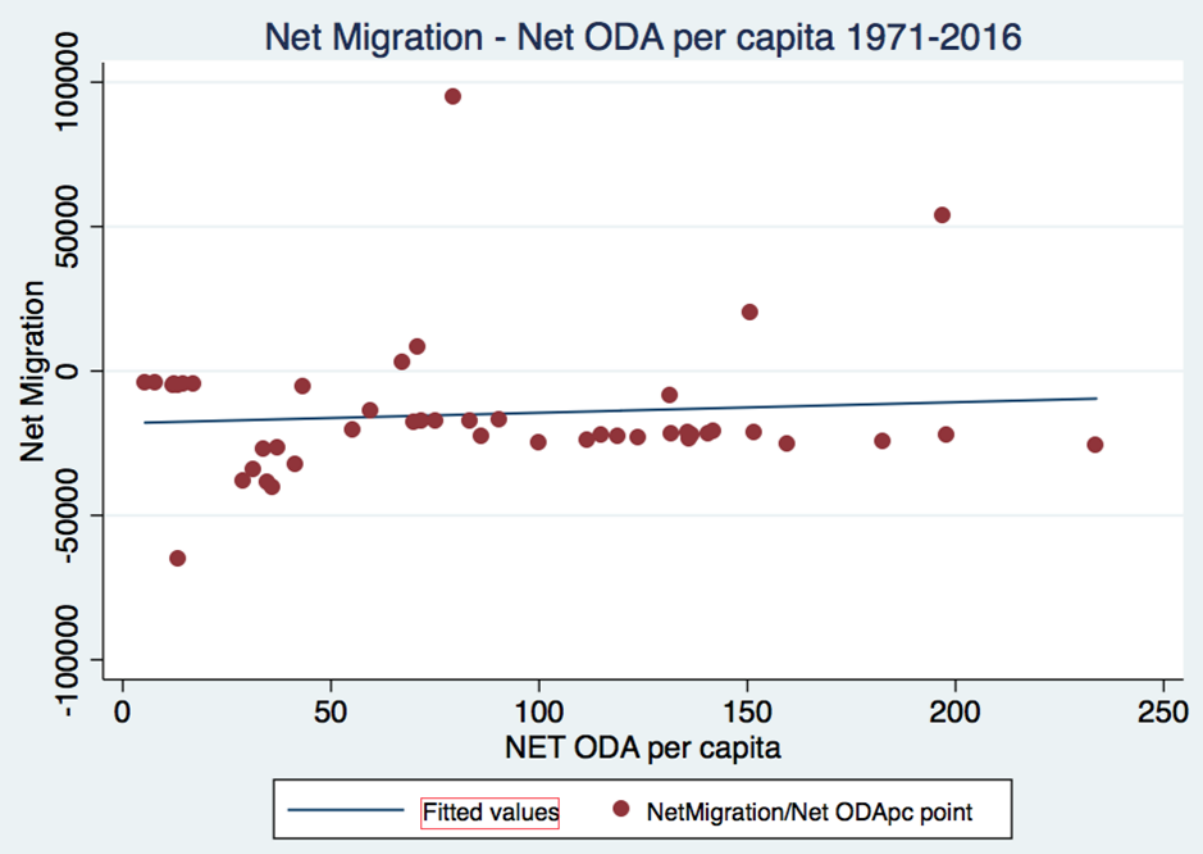

Figure 13. Scatter diagram simple linear regression outcome

Once again, we can observe an inverse relationship between the variables and three possible outliers, which correspond to years 1978, 1990, and 1991. The positions of the observations are quiet far from the prediction line, which can indicate that a different result can be found if three outliers are removed from the simple model. Curiosity had me run the simple model without the three outliers in order to prove whether or not I can obtain a different result.

In short, the result of the simple model can change if the three outliers are omitted from the model. Reducing the observation to 43 by eliminating the outliers, the F probability goes down to 0.31, which indicates that the model can work better. However we still have to reject the alternative hypothesis and accept the fact that the coefficient of the independent variable as well as the R square equals zero.

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

```
. pwcorr NetMigrationUSCensus NETODApercapita

             | N~USCe~s NETODA~a
-------------+------------------
NetM~SCensus |   1.0000
NETODAperc~a |  -0.1562   1.0000

. regress NetMigrationUSCensus NETODApercapita

      Source |       SS           df       MS      Number of obs   =        43
-------------+----------------------------------   F(1, 41)        =      1.02
       Model |  159454070         1  159454070     Prob > F        =    0.3173
    Residual |  6.3794e+09       41  155595519     R-squared       =    0.0244
-------------+----------------------------------   Adj R-squared   =    0.0006
       Total |  6.5389e+09       42  155687390     Root MSE        =     12474

------------------------------------------------------------------------------
NetMigrationU~s |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
----------------+-------------------------------------------------------------
NETODApercapita |  -33.58765   33.17877    -1.01   0.317    -100.5935    33.41824
          _cons |  -15006.24   3432.681    -4.37   0.000    -21938.68   -8073.797
------------------------------------------------------------------------------
```

Figure 14. Simple regression Net Migration - Net ODA without years 1978,1990 and 1991 outcome

The fitted line in the scatter diagram also shows a change after the three observations are removed. The relationship between the variables is negative, which indicates that as a unit in Net ODA is increased the number of migrants also increases. Nevertheless, the model has to be rejected because of the high F probability.

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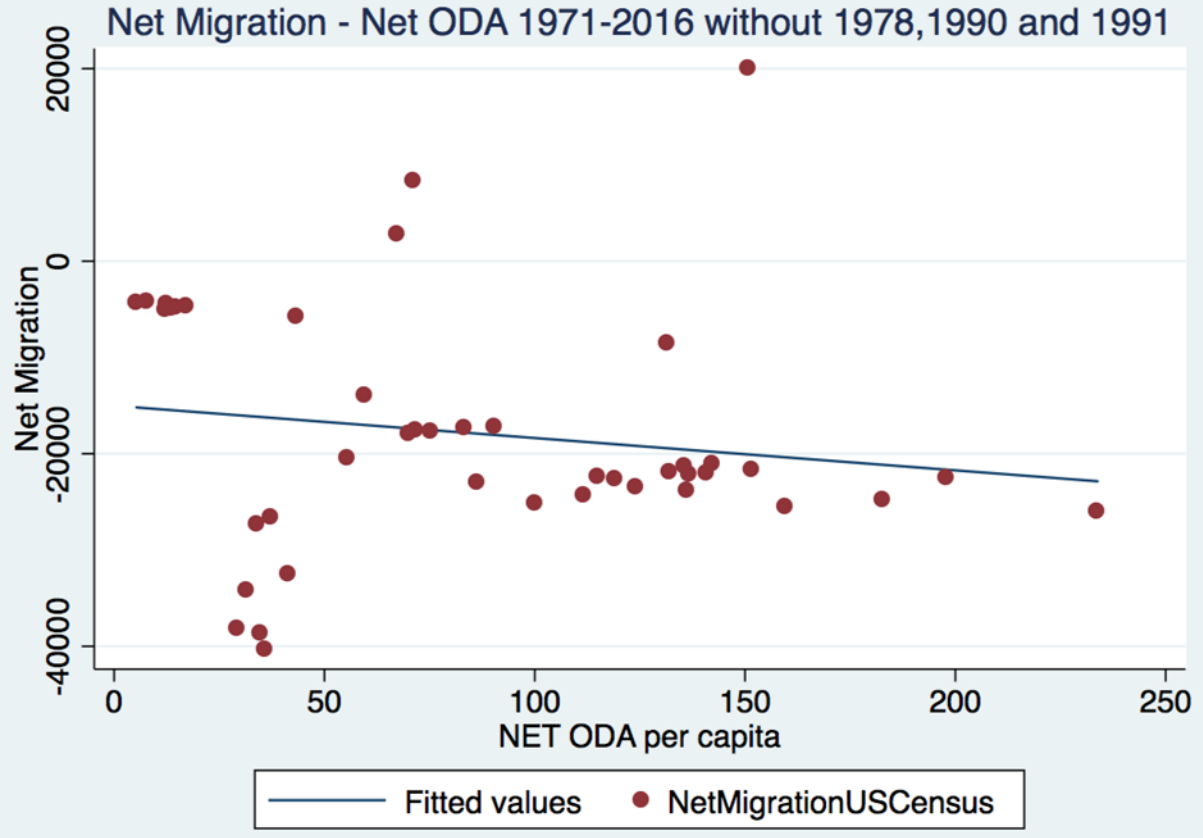

Figure 15. Scatter diagram Net Migration - Net ODA without years 1978,1990 and 1991 outcome

4.4 Multiple Linear Regression with Larger Universe Size

In the same sense, following the objectives of the research, I proceed to implement a multiple regression line including the two predictors for net migration. The 11 observations of the data from the World Bank are in this section replaced by the 46 ones obtained in the U.S. Census Bureau.

Despite the obligation in rejecting the simple linear model with 46 observations due to the high value of the F probability, we still need to run a multiple variable model. The results after implementing Stata software are shown in the following figure.

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

```
. pwcorr NetMigrationUSCensus NETODApercapita GDPpercapita

             | N~USCe~s NETODA~a GDPper~a
-------------+---------------------------
NetM~SCensus |   1.0000
NETODAperc~a |   0.0899   1.0000
GDPpercapita |  -0.3470   0.2983   1.0000

. regress NetMigrationUSCensus NETODApercapita GDPpercapita

      Source |       SS           df       MS      Number of obs   =        46
-------------+----------------------------------   F(2, 43)        =      4.14
       Model |  4.2287e+09         2  2.1143e+09   Prob > F        =    0.0227
    Residual |  2.1961e+10        43   510722189   R-squared       =    0.1615
-------------+----------------------------------   Adj R-squared   =    0.1225
       Total |  2.6190e+10        45   581993920   Root MSE        =     22599

------------------------------------------------------------------------------
NetMigrationU~s |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
----------------+-------------------------------------------------------------
NETODApercapita |   86.17446   59.38742     1.45   0.154    -33.59169    205.9406
   GDPpercapita |  -19.8909    7.092412   -2.80   0.008    -34.19411   -5.587691
          _cons |  -3445.507   7910.566   -0.44   0.665    -19398.68    12507.67
------------------------------------------------------------------------------
```

Figure 16. Multiple linear regression 46 observations outcome

The F probability equals 0.0227, which leads us to accept the model by rejecting the null hypothesis with 95 percent of confidence. The correlation coefficient points that the model works with a medium strength of negative 0.347. The observed variability in net migration is 16 percent explained by the predictors.

Concerning the coefficients of the dependents variables, we can state that as one unit in GDP per capita is increased, so is the number of net migrants. The opposite situation indicates the positive coefficient of ODA per capita, which promotes the reduction of net migrant. However, because the t probability of Net ODA is above 0.1 by 0.05, we need to arguably eliminate it from the system. We assume net ODA per capita cannot project the number of migrants by 86.17 after an increase in the amount of net ODA per capita is lent to Nicaragua. However, the rejection of the prediction of net ODA in the system can be criticized since the relation of net ODA and net migration in the simple linear model improved after the outliers were removed.

The formula for net migration forecast is defined as Y hat = -3345.5 – 19.89X_2

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

4.5 Comparison: Simple – Multiple Linear Regression

There are some key points to pin down while looking to the simple and multiple regression analysis when using the universe size of the data from the World Bank:

a. In both models -- simple and multiple linear regression -- Net ODA per capita showed a stronger relationship with the dependent variable. Checking the t probabilities sustains this observation.
b. The percentage in change explained by the variables – F probability – in the multilinear model is evidently higher: a difference of 16.73 percent.
c. The strength of the correlation is always positive for both models.
d. There is no change in the correlation coefficient for Net ODA per capita. Both models showed a 0.7566 coefficient between this variable and Net migration.
e. The number of Net migrants who might increase as one unit of Net ODA per capita is added is reduced in the multiple linear regression model by 256.7591, even when the coefficient of strength did not have a variation.
f. Independent variables are significant in both simple and multiple linear models.
g. The Root MSE is smaller in the multiple linear regression; therefore the prediction will have less dispersion around the fitted line of the prediction equation.

However, the error margin of the 11 observations is higher under the generalized appreciation of n<30. Therefore, with great determination, I was able to find a secondary source for Nicaragua net migration. The US Census Bureau provides yearly data for a long period of time, 1971-2050. Then, the same process of simple and multiple linear regression was implemented. We need to notice that:

a. In the simple linear regression, net ODA per capita is not a good predictor for net migration. There are some observations too far from the fitted line.
b. Under the simple model, we cannot reject the null hypothesis, therefore, there is not linear relationship between the variables.
c. If the outliers are removed from the simple model, the model becomes better to not enough to reject the null hypothesis.

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

d. For the multiple linear regression, the model is good and strong enough to reject the null hypothesis and assume that the coefficients are different from zero. The coefficient can influence the dependent variable.

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

Chapter 5: Conclusions

Migration is observed all around the world and Nicaragua is not an exception. As we mentioned in chapter two, migration is usually perceived with negative misconceptions. Under the globalization process that humans are experiencing today, the displacement of people will be an inevitable step as part of this transformation. The literature review provided reasons to accept migration as part of life. We should address the reasons for migration, which in many cases encompasses a weak financial situation. The living conditions of people, particularly in Nicaragua, lack strong continuous development. Peoples' basic needs are not completely satisfied thereby pushing citizens to migrate. And despite the efforts of international organizations in the form of ODA per capita to implement strategies in order to improve the social and economic wellbeing of Nicaraguans, migration has remained a phenomenon through the history of the country.

The benefits of migration are translated into remittances, which flow into the country. However, these have a cost in terms of family separation and discrimination, among other sufferings. Under liberal theories the process of migration is accepted as a natural action of the exercise of human rights.

Therefore, the design and evaluation of the linear model followed a concrete idea of investigating the influence--by accepting or rejecting the hypothesis--of Net ODA per capita and GDP per capita as predictors of Net migration.

The convenience of applying Stata software was translated in to reliable results for the analysis of the model. As noted in chapter four, both simple and multiple linear regression were shown to be good predictors for the outcome variable under specific circumstances. After the implementation of the methodology selected for the realization of this study, it was possible to determine results that validate the linear regression model. The implementation of the methodology was carried out in two sections, that is, two sample sizes were used. Mainly due to the possibility of observing doubtful results when 11 observations were used. For this reason, we proceeded to the search and implementation of the database of the United States Census bureau.

5.1 Simple and Multiple Lineal Regression: Population Size of 11 Observations

One major observation of this research is the relationship between Net ODA per capita and Net Migration. The goal of the ODA in essence is to provide monetary assistance to

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

countries in need, in an effort to overcome financial barriers, and so improve the quality of citizens' lives. However, according to the findings of this research (for eleven observations), the positive relationship of Net ODA per capita and Net migration stimulates the movement of Nicaraguan people to other countries. It would be logical to think that the more resources that were available for creating progress in a country, the better life conditions would be and, consequently, people could have a higher standard of life, which would reduce the idea of migration. But this is not the case in Nicaragua. Using the same result of Net ODA per capita and Net migration, the question is raised as to whether the goals of ODA are being fulfilled in Nicaragua. Further analysis about the usage of monetary founds from ODA in Nicaragua is thus recommended in the sense that we must observe whether the utilization of such money flows in various projects actually improves the life quality of Nicaraguan people.

Although we could say the amount of scarce resources can impact the development of these projects, it is perhaps more important to look at the usage of these founds, the correct selection of projects and the overall management of the money, which is under the control of government officials. We could state that the reality of migration cannot be mitigated by ODA disbursements, but on the contrary, it looks like ODA funds actually promote Net migration.

After incorporating GDP per capita as the second predictor for Net migration, we can see how both independent variables become strong causes for migration in Nicaragua. The GDP per capita and Net ODA per capita both play an economic role in the life of its citizens. According to the data, the GDP per capita has grown constantly in Nicaragua, which would lead us to think about economic progress and a greater amount of resources for each citizen. However, more GDP per capita does not necessarily mean a better life quality. The resources are at the discretion of the government as the administrator of the national budget. Apparently, the growth of GDP per capita is not possibly good enough to discourage Nicaraguan migration. The way the resources are distributed probably could be improved. However, the study of the budget of the nation and its implementation are key issues for future analysis in this regards.

The positive relationship between the variables is an incentive to develop our model. As the coefficients of the independent variables increase so does the coefficient of the dependent one. Once we insert the results in to the reality of migration, we need to highlight the irrationality of the relationship.

In both the simple and multiple linear regression models, the null hypothesis was rejected. In other worlds, the predictors for migration can be considered ideal causes for the dependent variable. A double side interpretation was made and shows that migration increases as

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

independent variables do under the positive relationship, but migration including the talent drain and human capital loss bring negative effects on the society.

In the case of Nicaragua, it is possible that Net ODA per capita accounts for a higher influence since the funds are loans that must be repaid and in order to do so, the nation's economic resources are undermined.

In summary, we were able to prove that two variables Net ODA per capita and GDP per capita are strong and valid predictors to explain Nicaragua migration under a universe population size of 11 observations.

5.2 Simple and Multiple Regression Analysis: Sample Size of 46 Observations

5.2.1 Simple Linear Regression

Given the controversy that arises with possible criticism of the regression system under 11 observations, I chose to look for a new reliable source with data superior to, or at least equal to, 30 observations. Thus, the census office of the United States provides more than 50 observations of net migration for Nicaragua.

Net ODA as well as GDP per capita data is available for the year 2017. Therefore, the selected years for the application of the methodology correspond to the period where the information of the three variables matches.

By utilizing software, I was able to obtain results in which the null hypothesis could not be rejected. The observed probability F is 0.51, a probability higher than the 10 percent that represents the minimum rule of statistical acceptance. Thus, the idea that the independent variable serves as a comfortable preacher of the dependent variable is not approved.

However, when observing the projection line in the diagram, three observations reflect rabbit characteristics. Observations that due to circumstances of error, poor estimation of the source from which the data were obtained or other external reasons, become rabbits. Thus, these three observations were eliminated in order to check if they had affected the veracity of the result in the first attempt of the simple linear regression. However, the results - despite showing an improvement - corroborated that ODA does not represent a possible prediction for net migration.

5.2.2 Multiple Linear Regression

As a second step, I proceeded to apply the software with the two independent variables. In this case, the probability F of 0.007 with an average inverse force in the Pearson coefficient

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is sufficient to accept the prediction model of net migration under the independent parameters. In this case the null hypothesis is rejected and we identify the model as an appropriate model for the study of Nicaraguan migration.

Unfortunately, despite improving and approaching the probability t for approval, with a value of 0.15, due to low disapproval, we must reconsider the role of the ODA variable. In this way, we have to emphasize that the relationship of the other independent variable drives the increase in Nicaragua's migration.

In short, we must consider that the increase in the number of observations reduces the strength of the Pearson relation between the variables as well as the prediction value of the migration under the influence of the independent variables; especially in the simple regression where we cannot accept the simple model as a prediction method.

In spite of the reduction in the prediction percentage in the migration variable in the linear regressions under 46 observations, we can still accept the model with inverse average force under the value of -0.31 in the Pearson coefficient.

The estimation of the annual variables of the census bureau of the United States shows a low annual increase in the number of Nicaraguan migrants. Possibly due to the limitations present in the migratory statistics that, in general, are reviewed every five years and, therefore, the annual numbers are approximations that could vary from reality. This possibility difference between the estimates and the real numbers, could have influenced the difference of results obtained after applying the software under 11 and 46 observations.

The total number of migrants according to the data of the World Bank surpasses by 400,000 migrants in the data offered by the census bureau of the United States, whose data even show a positive number of emigrants in Nicaragua. This, in my opinion, greatly contributes to the difference in results. 46 observations support a lower probability of error; however, estimating the estimated valid data from the census bureau creates a weakness in the number of net migration. The lower number of migrants under a constant estimation produces a low inclination in the prediction of the line.

5.3 Final analysis

It is important to mention that in the analysis of these variables, the sample size includes all the historical available data and for this reason, the sample constitutes the universal size for the World Bank database. The national census is not conducted every year. Therefore, the observations for the study given the sample size are few.

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

Therefore, other variables such as corruption indicator, poverty reduction, transparency and level of education could be included in broader research. The financial indicators lead us to think that it is how the funds are being used that forces Nicaragua migration. Nevertheless, implementing more independent variables could represent constraints because while collecting the data for this research we observed incomplete historical observations or missing values, which create limitations for any study.

We cannot argue about the results from future applications of linear regression using the same variables. The changes in the results for future research will probably depend on the behavior of the independent variables: the effectiveness of the implementation of Net ODA per capita and GDP per capita.

We can feel assured that the objectives of the research were achieved:

1) The relationship of the variables was established and verified after conducting the linear analysis for: the simple linear regression with 11 observations, the multiple linear regression with 11 and 46 observations respectively.
2) The null hypothesis was successfully rejected thereby validating the linear model, except for the simple model with 46 observations.
3) The strength of the model was determined in an appropriate level to be accepted as a reliable system, except for the simple analysis with 46 observations
4) The nature of migration needs further and deeper studies in order to create a pattern of the reasons and effects of mass mobility: under neoliberal theories and regardless of the reasons, migration is a natural phenomenon.

In the case of Nicaragua, it is possible that Net ODA per capita accounts for a higher influence since the funds are loans that must be repaid and in order to do so, the nation's economic resources are undermined.

In summary, we were able to prove that two variables Net ODA per capita and GDP per capita are strong and valid predictors to explain Nicaragua migration.

5.4 Assumptions

Official Development Assistance (ODA) basically represents the awareness of developed economic powers and their willingness to help less-privileged countries. It is logical to assume that we believe the monetary loans provided through ODA are directed at encouraging the

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

governments of low and middle-income states to improve the quality of life for their citizens. However, the positive relationship identified between ODA and net migration in the linear model contradicts this assumption, because the number of migrants is seen to rise as ODA increases.

Ideally, ODA assistance should have a positive influence on migration by reducing the number of people who would choose to leave a country. We can speculate that the processes and terms of agreements between ODA officials and Nicaragua governments are not disclosed to the public. This situation allows the national government to use the loans with high discretion, which in turn could promote distrust among the local population that has a total lack of knowledge as to how the ODA loans are invested.

Moreover, after a long period of ODA disbursements, and because of the high discretion in the loan implementation, we could assume that the original approved projects by the ODA office and proposed for the Nicaragua government might be: wrongly selected and not beneficial for the population, not completed as originally proposed, or were designed for the benefit of particular small powerful groups linked to the government. If a project has no positive direct impact in the life of the Nicaraguan citizens, the wellbeing of the population will continue deteriorating and, as a result, the necessity for a better place to live where basic needs are covered would encourage people to migrate. The lack of transparency for the disbursements and controls over the correct application of the loans during and after project completion could definitely push Nicaraguans to emigrate.

Corruption is a widespread phenomenon in Nicaraguan political society. Corruption therefore becomes a factor that affects citizens from many different aspects: Distrust is created among the population due to the lack of appropriate standards of control over the received loans.

Distrust might motivate citizens to protest against the actions of the Nicaragua government. As a result, the government could use police enforcement to repress its citizens who are protesting. For example, since April 2018, protesters in Nicaragua have being suffering police repression and thousands of citizens (students, journalists, doctors and some priests) have being forced to emigrate to avoid repression and to preserve their lives, looking for a country that can guarantee them an improved quality of life. This just happened after the people manifested disagreement for the social security reforms that the government was trying to implement in a desperate effort to compensate the grave monetary deficit of the savings of the Nicaraguan Institute of Social Security, savings that corresponded to the contributions of all Nicaraguan workers, the same funds that had been invested for the government to finance

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

different governmental and private projects. Sadly those investments have not resulted in any profit to increase the initial funds of the savings institution.

In addition, there is the impact of secrecy, which has a tangible negative impact on the microeconomics of households. That is because despite the ODA assistance, the secrecy in the design and implementation of public policies creates an imbalance in the national economy, raising the cost of living in the country every day. The average social situation of Nicaragua families is within the condition of low and middle-income levels, according to research by international organizations, a reality that pushes families to evaluate the option of migrating in order to achieve better economic and social conditions for their families.

On the other hand, we might say that separate bilateral agreements between countries can accelerate the existence and acknowledgment of corruption. Despite criticism of the national police actions during the 2018 protests in Nicaragua, Taiwan donated USD3 million to the Nicaragua Police Department to improve the police hospital--a public hospital that was created to provide medical care primarily to the police officers but also Nicaraguan citizens that do not belong to the police force; however, during the social unrest, medical assistance was negated to protestors injured during the very same protests. Indeed, the lack of processes to verify the correct use of the money let people distrust the government and the donator.

Additional to this donation, Taiwan had previously donated USD30 million to build a national stadium in Managua, but the government used the money to build houses for its political supporters. Later on, the government asked for a loan from a private national bank in order to finance the construction of the stadium and eventually was successful in holding the inauguration ceremony--a baseball game between the national teams of Taiwan and Nicaragua (according to various press releases). Transparency is set aside or taken for granted once the money is in the hands of the government. The secrecy and alternate usage of the ODA funds naturally make citizens attribute dishonesty to the government and, therefore, secrecy will discourage Nicaragua citizens from staying in the country.

Therefore, we can assume that the lack of transparency and disclosure in both ODA assistance and government implementation of such assistance will result in a high level of distrust among citizens. It could create a harmful socioeconomic environment for the population and as a result, by fleeing from corruption, citizens will consider emigrating in order to satisfy their basic human needs while also seeking to improve their life conditions and secure their human rights.

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References

Acock, A. C. (2005). SAS, stata, SPSS: A comparison. *Journal of Marriage and Family, 67*(4), 1093-1095.

Acosta, P., Calderon, C., Fajnzylber, P., & Lopez, H. (2008). What is the impact of international remittances on poverty and inequality in Latin America? *World Development, 36*(1), 89-114.

Adams, R. H. Jr, & Page, J. (2005). Do international migration and remittances reduce poverty in developing countries? *World Development*, *33*(10), 1645-1669.

Alfred, M. V. (2002). Immigrants in America: Who are they, and why do they come? *Adult Learning, 13*(1), 2-5

Asia News Monitor. (2018, Apr 24). *World: Record high remittances to low- and middle-income countries in 2017*. Retrieved from https://search-proquest-com.autorpa.lib.nccu.edu.tw/docview/2029037687?accountid=10067

Baheiraei, A., Bakouei, F., Mohammadi, E., Majdzadeh, R., & Hosseni, M. (2016). Association between social capital and health in women of reproductive age: A population-based study. *Global Health Promotion, 23*(4), 6-15.

Banco Central de Nicaragua. (2016, March 31). *Tipos de Cambio Oficial del Cordoba con respect al USD*. Retrieved from https://www.bcn.gob.ni/estadisticas/mercados_cambiarios/tipo_cambio/cordoba_dolar/tipoc_pdf.php?mes=06&anio=2016

Banco Central de Nicaragua. (2018, June 30). *Tipos de Cambio Oficial del Cordoba con respect al USD*. Retrieved from https://www.bcn.gob.ni/estadisticas/mercados_cambiarios/tipo_cambio/cordoba_dolar/tipoc_pdf.php?mes=03&anio=2018

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

Bejarano, M. (2018, March 10). Salario minimo crece 60% en seis anos. *El Nuevo Diario*. Retrieved from https://www.elnuevodiario.com.ni/economia/458026-salario-minimo-crece-60-seis-anos/

Best, M., L., & Wade, K., W. (2009). The internet and democracy: Global catalyst or democratic dud? *Bulletin of Science, Technology & Society, 29*(4), 255-271.

Birdsall, N., & Kharas, H. (2010). *Quality of official development assistance assessment.* Retrieved from https://www.cgdev.org/sites/default/files/1424481_file_CGD_QuODA_web.pdf

Burke Johnson, R., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher, 33*(7), 14–26.

Castles, S. (2002). Migration and community formation under conditions of globalization [abstract]. *The International Migration Review, 36*(4), 1143-1168.

Castles, S. (2004). The factors that make and unmake migration policies. *The International Migration Review, 38*(3), 852-884.

Cerdin, J.-L, Diné, M. A., & Brewster, C. (2014). Qualified immigrants' success: Exploring the motivation to migrate and to integrate. *Journal of International Business Studies, 45*(2), 151-168.

Cervantes-Rodriguez, A. (2006). Nicaraguans in miami-dade county: Immigration, incorporation, and transnational entrepreneurship. *Latino Studies, 4*(3), 232-257.

Clark, W. A. V., & Maas, R. (2015). Interpreting migration through the prism of reasons for moves. *Population, Space and Place, 21*(1), 54-67.

Clemens, M. A. (2017). *Migration is a form of development: The need for innovation to regulate migration for mutual benefit* (Technical Paper No. 2017/8). Retrieved from http://www.un.org/en/development/desa/population/migration/publications/technicalpapers/docs/TP2017-8.pdf

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

Collins, C. S., & Rhoads, R. A. (2010). The world bank, support for universities, and asymmetrical power relations in international development. *Higher Education, 59*(2), 181-205.

Coskuntuncel, O. (2013). The use of alternative regression methods in social sciences and the comparison of least squares and M estimation methods in terms of the determination of coefficient. *Educational Science: Theory & Practice, 13*(4), 2151-2158.

Cotoi, C. (2011). Neoliberalism: A foucauldian perspective. *International Review of Social Research, 1*(2), 109-124.

Diaz-Briquets, S., & Perez-Lopez, J. (1997). Refugee remittances: Conceptual issues and the Cuban and Nicaraguan experiences. *The International Migration Review, 31*(2), 411-437.

Espinoza, J. I. (2017, December 20). Mas de US$900 millones en prestamos para Nicaragua. *El Nuevo Diario*. Retrieved from https://www.elnuevodiario.com.ni/nacionales/451048-mas-us-900-millones-prestamos-nicaragua/

Feliciano, C. (2005). Does selective migration matter? Explaining ethnic disparities in educational attainment among immigrants' children. *The International Migration Review, 39*(4), 841-871.

Gerhan, D. R. (1999). When quantitative analysis lies behind a reference question. *Reference & User Services Quarterly, 39*(2), 166-176.

Harwell, M. (2014). Not so fast my friend: The rush to R and the need for rigorous evaluation of data analysis and software in education. *Educational Research Quarterly, 38*(1), 43-57.

Hoff, P. D., & Ward, M. D. (2004). Modeling dependencies in international relations networks. *Political Analysis, 12*(2), 160-175.

Hovey, J. D. (2000). Acculturative stress, depression, and suicidal ideation among central american immigrants. *Suicide & Life-Threatening Behavior, 30*(2), 125-39.

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

Iimi, A., & Ojima, Y. (2008). Complementarities between grants and loans. *Journal of the Japanese and International Economies, 22*(1), 109-141.

Wall Street Journal. (2010, Aug 30). *IMF expands loan offerings to developing countries; developing countries seen at risk are urged to seek funds before crises erupt*. Received from https://search-proquest-com.autorpa.lib.nccu.edu.tw/docview/748316349?accountid=10067

IndexMundi. (2017). *Nicaragua population*. Retrieved from https://www.indexmundi.com/nicaragua/population.html

International Monetary Fund. (2018). *Lending by the IMF*. Retrieved from https://www.imf.org/external/about/lending.htm

Instituto Nacional de Informacion de Desarrollo. (2017). *Canasta basica, analisis descriptive del comportamiento de precios de la canasta basica, en el period de enero 2016 a enero 2017*. Retrieved from http://www.inide.gob.ni/CanastaB/AnalisisCB2016-2017.pdf

Isobe, T., Feigelson, E. D., Akritas, M. G., & Babu, G. J. (1990). Linear regression in astronomy. *Astrophysical Journal, 364*, 104-113.

Jacobsen, K. (1996). Factors influencing the policy responses of host governments to mass refugee influxes. *The International Migration Review, 30*(3), 655-678.

Jenson, J. M. (2008). Keeping pace with methodological and analytical advances in social research. *Social Work Research, 32*(2), 67-69.

Jokela, M., Elovainio, M., Kivimaki, M., & Keltikangas-Jarvinen, L. (2008). Temperament and migration patterns in Finland. *Psychological Science, 19*(9), 831–837.

Jose, A. S. (2018, Feb 15). Migrants are hit hard by Nicaragua's closed-border strategy. *Inter Press Service*. Retrieved from https://search-proquest-com.autorpa.lib.nccu.edu.tw/docview/2002398722?accountid=10067

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

Krause, G. A. (1994). Is regression analysis really leading political science down a blind alley? *PS, Political Science & Politics, 27*(2), 187-190.

Lanati, M., Thiele, R. (2017). *The impact of foreign aid on migration revisited. European University Institute, Max Weber Programme 2017/05*. Retrieved from http://cadmus.eui.eu/bitstream/handle/1814/46124/MWP_2017_05.pdf?sequence=1

OxResearch Daily Brief Service. (2017, Aug 18). *LATIN AMERICA: Brain drain negates remittances.* Retrieved from https://dailybrief.oxan.com/Analysis/DB222299/Brain-drain-negates-remittances-in-Latin-America

Lind, D. A., Marchal, W. G., & Wathen, S. A. (2012). *Statistical Techniques in Business & Economics (15th ed.)*. New York, NY: McGraw-Hill.

Loebach, P. (2016). Household migration as a livelihood adaptation in response to a natural disaster: Nicaragua and hurricane mitch. *Population and Environment, 38*(2), 185-206.

Mansbach, R. W., & Taylor, K. L. (2007). *Introduction to global politics*. Retrieved from https://ebookcentral-proquest-com.autorpa.lib.nccu.edu.tw/lib/nccu/reader.action?docID=324925&query=

Maradiaga, C. F. D., Rodriguez, G. L. J., Lozano, R. M. & Vallejo, C. E. (2013). *Inferencia estadistica Modulo de regression lineal simple. Facultad de Administracion*. Retrieved from https://www.researchgate.net/publication/298431518_Inferencia_estad'istica-Modulo_de_regresion_lineal_simple

Martinek, W. L. (2017). A review of textbooks for teaching graduate research methods. *PS, Political Science & Politics, 50*(2), 554-558.

McNevin, A. (2006). Political belonging in a Neoliberal era: The struggle of the Sans-Papiers, *Citizenship Studies, 10*(2), 135-151. Retrieved from https://www.tandfonline.com/doi/full/10.1080/13621020600633051

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

Misini, S., & Badivuku-Pantina, M. (2017). The effect of economic growth in relation to unemployment. *Journal of Economics and Economic Education Research, 18*(2), 1-9.

Monico, C. (2017, Mar 28). Educating children in Guatemala before they decide to migrate to the US border. *The Conversation*. Retrieved from https://theconversation.com/educating-children-in-guatemala-before-they-decide-to-migrate-to-the-us-border-74680

Mooney, M. (2003). Migrants' social ties in the U.S. and investment in Mexico. *Social Forces, 81*(4), 1147-1170.

Mukherjee, B. (2008). International economic organizations and economic development: An assessment. *SAIS Review of International Affairs, 28*(2), 123-137.

Oberman, K. (2015). Poverty and immigration policy. *The American Political Science Review, 109*(2), 239-251.

Organization for Economic Co-operation and Development. (2014, May*). Is migration good for the economy? Migration Policy Debate*. Retrieved from https://www.oecd.org/migration/OECD%20Migration%20Policy%20Debates%20Numero%202.pdf

Organization for Economic Co-operation and Development. (2018a). *Distribution of net ODA*. Retrieved from https://data.oecd.org/oda/distribution-of-net-oda.htm#indicator-chart

Organization for Economic Co-operation and Development. (2018b). *Interactive summary charts by aid (ODA) recipients*. Data at glance by recipient. Retrieved from https://public.tableau.com/views/OECDDACAidataglancebyrecipient_new/Recipients?:embed=y&:display_count=yes&:showTabs=y&:toolbar=no?&:showVizHome=no

Organization for Economic Co-operation and Development. (2018c) *What we do and how.* Retrieved from http://www.oecd.org/about/whatwedoandhow/

Organization of the America States, Economic Organization for Cooperation and Development. (2017). International migration in the Americas. Fourth Report of the Continuous

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

Reporting System on International Migration in The Americas (SICREMI). Retrieved from http://www.oas.org/Documents/Eng/Press/SICREMI-2017-English-Web-FINAL.Pdf

Ostergaard-Nielsen, E. (2003). *International migration and sending countries: Perceptions, policies and transnational relations.* Retrieved from https://books.google.es/books?hl=en&lr=&id=klF9DAAAQBAJ&oi=fnd&pg=PP1&ots=MFqcTJBg4A&sig=V79FgOkt-5JxIQdMw3c6e4p1ngU#v=onepage&q&f=false

Raffo, V., Bliss, T., Shotten, M., Sleet, D., & Blanchard, C. (2013). Case study: The Argentina road safety project: Lessons learned for the decade of action for road safety, 2011–2020. *Global Health Promotion, 20*(4), 20-36.

M2 Presswire. (2018, Feb 22). *Remittance market 2018 global analysis, opportunities and forecast to 2022.* Retrieved from https://search-proquest-com.autorpa.lib.nccu.edu.tw/docview/2007100973?accountid=10067

Romero, K. T. (2017, November 5). Los tres caminos del migrante nicaraguense. *La Prensa*. Retrieved from https://www.laprensa.com.ni/2017/11/05/suplemento/la-prensa-domingo/2325318-los-tres-caminos-del-migrante-nicaraguense

Sanderson, M. R., & Kentor, J. D. (2009). Globalization, development and international migration: A cross-national analysis of less-developed countries, 1970-2000. *Social Forces, 88*(1), 301-336.

Santiago-Rivera, A. (2003). Latinos values and family transitions: Practical considerations for counseling. *Counseling and Human Development, 35*, 1-12.

Sarin, R. (2003, May). As migration grows, immigrants face greater barriers. *World Watch, 16*, 8. Retrieved from https://search-proquest-com.autorpa.lib.nccu.edu.tw/docview/230031106?accountid=10067

Shera, A., & Meyer, D. (2013). Remittances and their impact on economic growth. *Periodica Polytechnica Social and Management Sciences, 21*(1), 3-19.

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

Silver, A. (2014). Families across borders: The emotional impacts of migration on origin families. *International Migration, 52*(3), 194-220.

STATA. (2018a). *Linear regression*. Retrieved from https://www.stata.com/features/overview/linear-regression-and-influence/

STATA. (2018b). *Why use STATA*. Retrieved from https://www.stata.com/why-use-stata/

STATA. (n.d.). *Structural models 1 Linear regression. STATA manual*. Retrieved from https://www.stata.com/manuals/semintro5.pdf

Swamy, M. R. K. (2001). Does foreign loan-financed "tricknology" transfer of technology to highly import-based developing countries involve one per cent gain and ninety nine per cent loss? A financial. *Journal of Financial Management & Analysis, 14*(1), 64-73.

Taagepera, R. (2011). Adding meaning to regression. *European Political Science: EPS, 10*(1), 73-85.

Tucker, C. M., Torres-Pereda, P., Minnis, A. M., & Bautista-Arredondo, S. A. (2013). Migration decision-making among Mexican youth: Individual, family, and community influences. *Hispanic Journal of Behavioral Sciences, 35*(1), 61-84.

United Nations. (2014). *Report of the Intergovernmental Committee of Experts on Sustainable Development Financing.* Retrieved from http://www.un.org/esa/ffd/wp-content/uploads/2014/12/ICESDF.pdf

United Nations. (2017). *International migration report 2017*. Retrieved from http://www.un.org/en/development/desa/population/migration/publications/migrationreport/docs/MigrationReport2017.pdf

United States Census Bureau. (2013). *International data base population estimates and projections methodology*. Retrieved from https://www2.census.gov/programs-

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

surveys/international-programs/technical-documentation/methodology/idb-methodology.pdf

United States Census Bureau. (2019). I*nternational data base, demographic overview – custom region – Nicaragua*. Retrieved from https://www.census.gov/data-tools/demo/idb/region.php?N=%20Results%20&T=13&A=separate&RT=0&Y=1970,1971,1972,1973,1974,1975,1976,1977,1978,1979,1980,1981,1982,1983,1984,1985,1986,1987,1988,1989,1990,1991,1992,1993,1994&R=-1&C=NU

University of Pennsylvania - the Wharton School. (September 2013). *What Migration Can (and Can't) Do for a Country's GDP.* Retrieved from http://knowledge.wharton.upenn.edu/article/what-migration-can-and-cant-do-for-a-countrys-gdp/

Vertovec, S. (2004). Migrant transnationalism and modes of Transformation1. *The International Migration Review, 38*(3), 970-1001.

Wong, R., Palloni, A., & Soldo, B. J. (2007). Wealth in middle and old age in Mexico: The role of international migration. The International Migration Review, 41(1), 127-151.

World Bank. (July 26, 2012). *Getting to know the World Bank*. Retrieved from http://www.worldbank.org/en/news/feature/2012/07/26/getting_to_know_theworldbank

World Bank. (2018a). *Country profile, Nicaragua*. Retrieved from https://data.worldbank.org/country/nicaragua?view=chart

World Bank. (2018b). Data by indicator: GDP per capita (current US$), Nicaragua. Retrieved from https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=NI&view=chart

World Bank. (2018c). Data by indicator: Net migration, Nicaragua. Retrieved from https://data.worldbank.org/indicator/SM.POP.NETM?locations=NI&view=chart

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

World Bank. (2018d). Data by indicator: Net ODA received per capita, Nicaragua. Retrieved from https://data.worldbank.org/indicator/DT.ODA.ODAT.PC.ZS?locations=NI&view=chart

World Bank. (2018e). Data by indicator: Population total, Nicaragua. Retrieved from https://data.worldbank.org/indicator/SP.POP.TOTL?locations=NI&view=chart

World Bank. (2018f). GDP per capita (current US$). Retrieved from https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?view=chart

World Bank. (2018g). Net ODA received per capita (current US$). Retrieved from https://data.worldbank.org/indicator/DT.ODA.ODAT.PC.ZS?locations=NI&view=chart

Zaman, K., & Shamsuddin, S. (2018). Linear and non-linear relationships between growth, inequality, and poverty in a panel of Latin America and the Caribbean countries: A new evidence of pro-poor growth. *Social Indicators Research, 136*(2), 595-619.

Zangl, B., Heußner, F., Kruck, A., & Lanzendörfer, X. (2016). Imperfect adaptation: How the WTO and the IMF adjust to shifting power distributions among their members. *The Review of International Organizations, 11*(2), 171-196.

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

Appendices

Appendix 1: Complete Data for 11 and 46 observations analysis

Year	GDP per capita	Net ODA per capita	Net Migration WorldBank	GDP Current	Population World Bank	Net Migration Rate US Census	Midyear Population US Census	Net Migration US Census
1960	128.0348	4.3388	N/A	227,223,300	1,774,699	N/A	N/A	N/A
1961	133.3830	4.5564	N/A	244,144,200	1,830,400	N/A	N/A	N/A
1962	142.7378	3.7635	(14,003)	269,283,800	1,886,562	N/A	N/A	N/A
1963	152.9768	4.0904	N/A	297,324,200	1,943,590	N/A	N/A	N/A
1964	173.3763	4.6351	N/A	347,119,900	2,002,119	N/A	N/A	N/A
1965	273.5779	5.0663	N/A	564,290,000	2,062,630	N/A	N/A	N/A
1966	285.6807	7.8344	N/A	607,140,000	2,125,240	N/A	N/A	N/A
1967	300.0801	7.5210	(18,997)	657,140,000	2,189,882	N/A	N/A	N/A
1968	307.0124	7.4752	N/A	692,860,000	2,256,782	N/A	N/A	N/A
1969	322.4227	7.9359	N/A	750,000,000	2,326,139	N/A	N/A	N/A
1970	324.6617	9.9037	N/A	778,569,900	2,398,096	N/A	N/A	N/A

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

1971	335.0931	7.7932	N/A	828,570,000	2,472,656	-2	2,120,000	(4,240.00)
1972	344.5678	5.3260	(37,999)	878,570,000	2,549,774	-2	2,183,000	(4,366.00)
1973	415.6296	12.5841	N/A	1,092,900,000	2,629,505	-2	2,248,000	(4,496.00)
1974	561.0196	17.2170	N/A	1,521,400,000	2,711,848	-2	2,320,000	(4,640.00)
1975	565.5144	14.7922	N/A	1,581,600,000	2,796,746	-2	2,395,000	(4,790.00)
1976	636.8936	13.5360	N/A	1,836,900,000	2,884,155	-2	2,473,000	(4,946.00)
1977	748.8720	12.2335	(58,001)	2,227,000,000	2,973,806	-2	2,554,000	(5,108.00)
1978	694.1660	13.4742	N/A	2,127,700,000	3,065,117	-25	2,608,000	(65,200.00)
1979	496.4915	35.9636	N/A	1,567,600,000	3,157,355	-15	2,687,000	(40,305.00)
1980	659.8029	67.2172	N/A	2,144,300,000	3,249,910	1	2,803,000	2,803.00
1981	740.3365	43.3606	N/A	2,474,700,000	3,342,669	-2	2,899,000	(5,798.00)
1982	714.4468	34.9321	(110,002)	2,454,500,000	3,435,525	-13	2,976,000	(38,688.00)
1983	780.3706	33.9575	N/A	2,753,100,000	3,527,939	-9	3,044,000	(27,396.00)
1984	861.3932	31.3905	N/A	3,117,600,000	3,619,253	-11	3,114,000	(34,254.00)
1985	723.5466	29.1716	N/A	2,683,700,000	3,709,091	-12	3,180,000	(38,160.00)

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

1986	760.0377	41.4547	N/A	2,885,800,000	3,796,917	-10	3,248,000	(32,480.00)
1987	991.8250	37.1780	(150,001)	3,851,200,000	3,882,943	-8	3,322,000	(26,576.00)
1988	662.9534	55.3767	N/A	2,630,900,000	3,968,454	-6	3,404,000	(20,424.00)
1989	251.5166	59.7125	N/A	1,019,966,667	4,055,265	-4	3,492,000	(13,968.00)
1990	243.5613	79.5162	N/A	1,009,455,484	4,144,565	26	3,644,000	94,744.00
1991	351.3982	197.0803	N/A	1,488,804,124	4,236,801	14	3,839,000	53,746.00
1992	413.9195	150.8493	(120,001)	1,792,800,000	4,331,277	5	4,007,000	20,035.00
1993	396.7971	71.1091	N/A	1,756,454,248	4,426,580	2	4,156,000	8,312.00
1994	854.5499	131.4524	N/A	3,863,185,119	4,520,725	-2	4,289,000	(8,578.00)
1995	897.7158	140.7411	N/A	4,140,470,000	4,612,228	-5	4,402,000	(22,010.00)
1996	916.5187	198.0225	N/A	4,308,351,903	4,700,779	-5	4,503,000	(22,515.00)
1997	917.1288	86.2567	(145,000)	4,389,965,591	4,786,640	-5	4,598,000	(22,990.00)
1998	951.8734	124.0013	N/A	4,635,267,225	4,869,626	-5	4,689,000	(23,445.00)
1999	981.0205	136.1447	N/A	4,855,717,875	4,949,660	-5	4,778,000	(23,890.00)
2000	1,016.0207	111.7949	N/A	5,107,329,007	5,026,796	-5	4,866,000	(24,330.00)

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

2001	1,043.6008	182.7006	N/A	5,323,146,566	5,100,750	-5	4,952,000	(24,760.00)
2002	1,010.1473	100.0419	(173,998)	5,224,213,018	5,171,734	-5	5,036,000	(25,180.00)
2003	1,015.5653	159.6354	N/A	5,322,454,926	5,240,879	-5	5,116,000	(25,580.00)
2004	1,091.5052	233.8059	N/A	5,795,568,205	5,309,703	-5	5,193,000	(25,965.00)
2005	1,175.1162	142.1218	N/A	6,321,335,612	5,379,328	-4	5,267,000	(21,068.00)
2006	1,240.9926	135.7617	N/A	6,763,671,611	5,450,211	-4	5,338,000	(21,352.00)
2007	1,344.3019	151.6342	(155,000)	7,423,377,429	5,522,106	-4	5,408,000	(21,632.00)
2008	1,518.8054	132.0063	N/A	8,496,965,842	5,594,506	-4	5,476,000	(21,904.00)
2009	1,464.4978	136.6785	N/A	8,298,695,145	5,666,581	-4	5,541,000	(22,164.00)
2010	1,526.4979	115.0962	N/A	8,758,622,329	5,737,723	-4	5,604,000	(22,416.00)
2011	1,682.9579	119.0636	N/A	9,774,316,692	5,807,820	-4	5,666,000	(22,664.00)
2012	1,792.0380	90.5752	(135,000)	10,532,001,130	5,877,108	-3	5,728,000	(17,184.00)
2013	1,847.1980	83.3873	N/A	10,982,972,256	5,945,747	-3	5,789,000	(17,367.00)
2014	1,975.4647	71.8607	N/A	11,880,438,824	6,013,997	-3	5,849,000	(17,547.00)
2015	2,073.5000	75.2906	N/A	12,611,087,031	6,082,035	-3	5,908,000	(17,724.00)

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

2016	2,151.3820	70.0024	N/A	13,184,989,878	6,149,928	-3	5,967,000	(17,901.00)
2017	2,221.8000	N/A	(106,342)	13,814,261,536	6,217,581	-3	6,026,000	(18,078.00)
		Total =	**(1,224,344)**				Total =	**(704,439.00)**

Note:

GDP per capita current. Years 1960-1988 calculated (GDP current divided by total Population. GDP current 1961-1988 retrieved from Index Mundi

Net ODA per capita. Source World Bank

Net Migration. Source World Bank

Population. Source: World Bank

GDP Current: Source IndexMundi (1960-1988), World Bank (1989-2017)

Net Migration Rate. Source Us Census Bureau.

Midyear Population. Source Us Census Bureau.

Net Migration. Source Us Census Bureau. Calculated (Net Migration Rate/1000 * Midyear Population

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

Appendix 2: Demographic Graphs

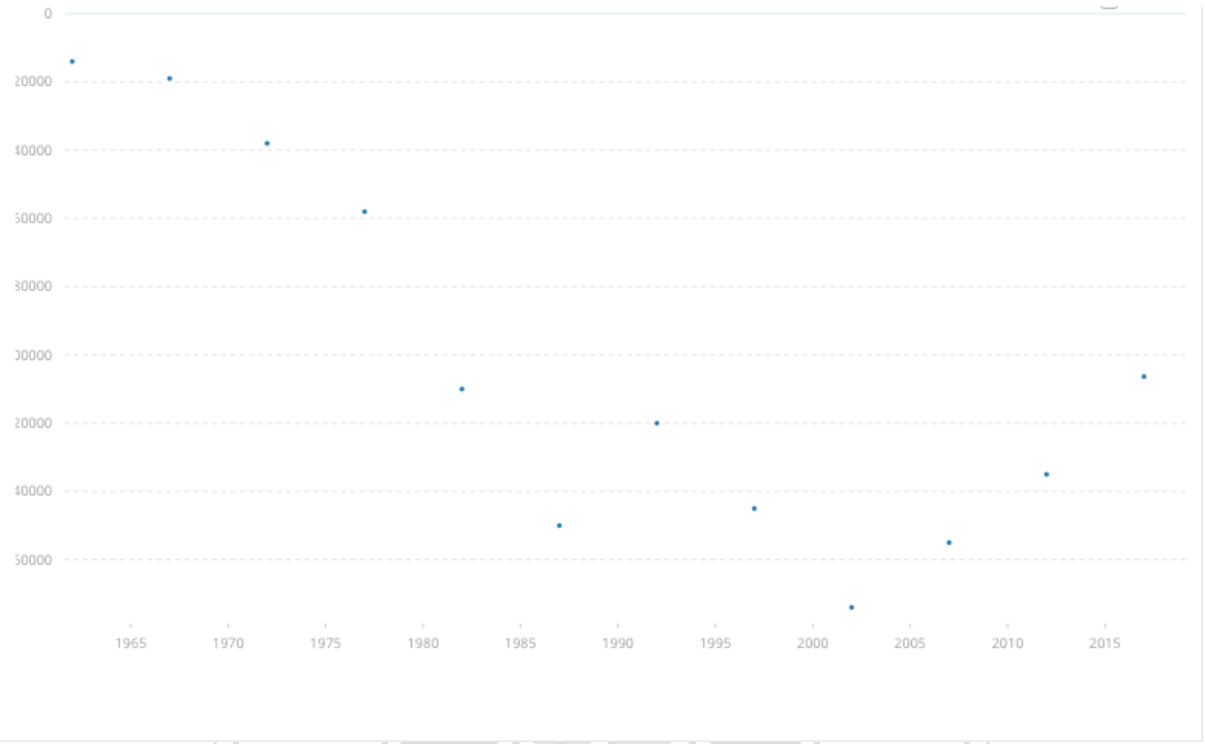

Figure 17. Nicaragua Net Migration. Adopted from "World Bank," 2018c, Retrieved from https://data.worldbank.org/indicator/SM.POP.NETM?locations=NI&view=chart

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

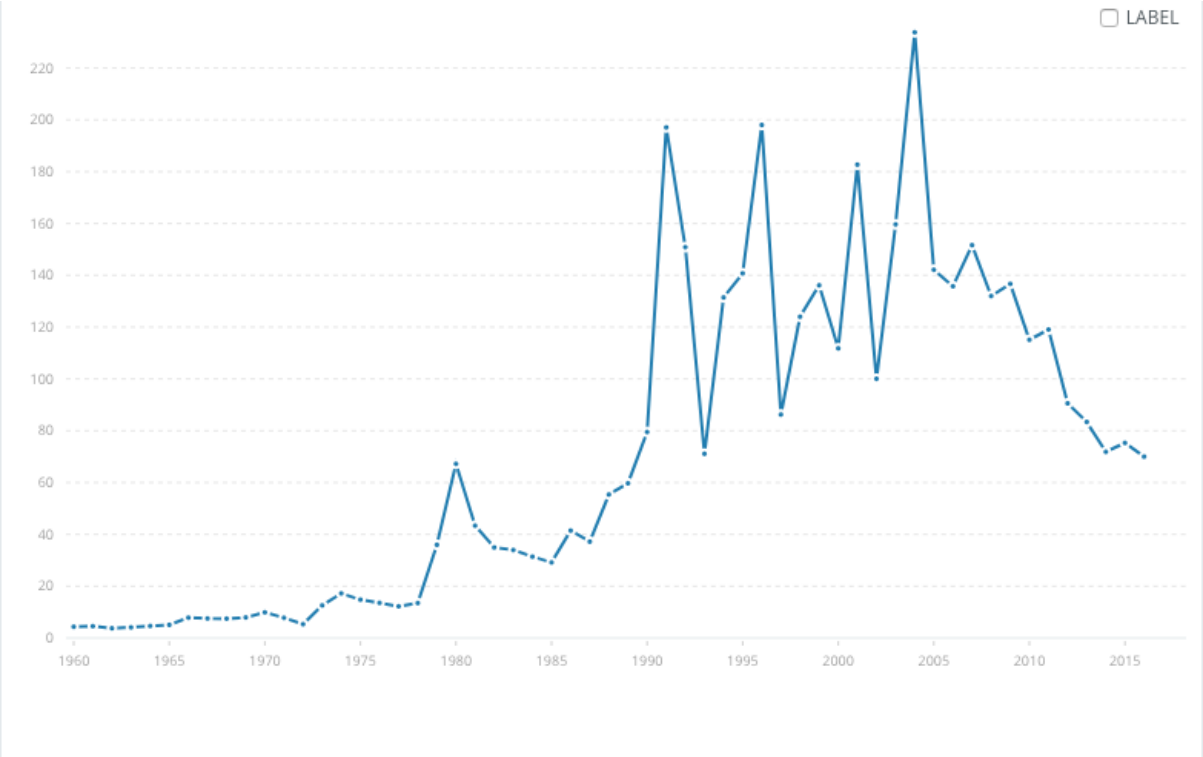

Figure 18. Net ODA per capita (current US$). Adopted from "World Bank," 2018f, Retrieved from https://data.worldbank.org/indicator/DT.ODA.ODAT.PC.ZS?locations=NI&view=chart

DOI:10.6814/THE.NCCU.IMPIS.001.2019.A06

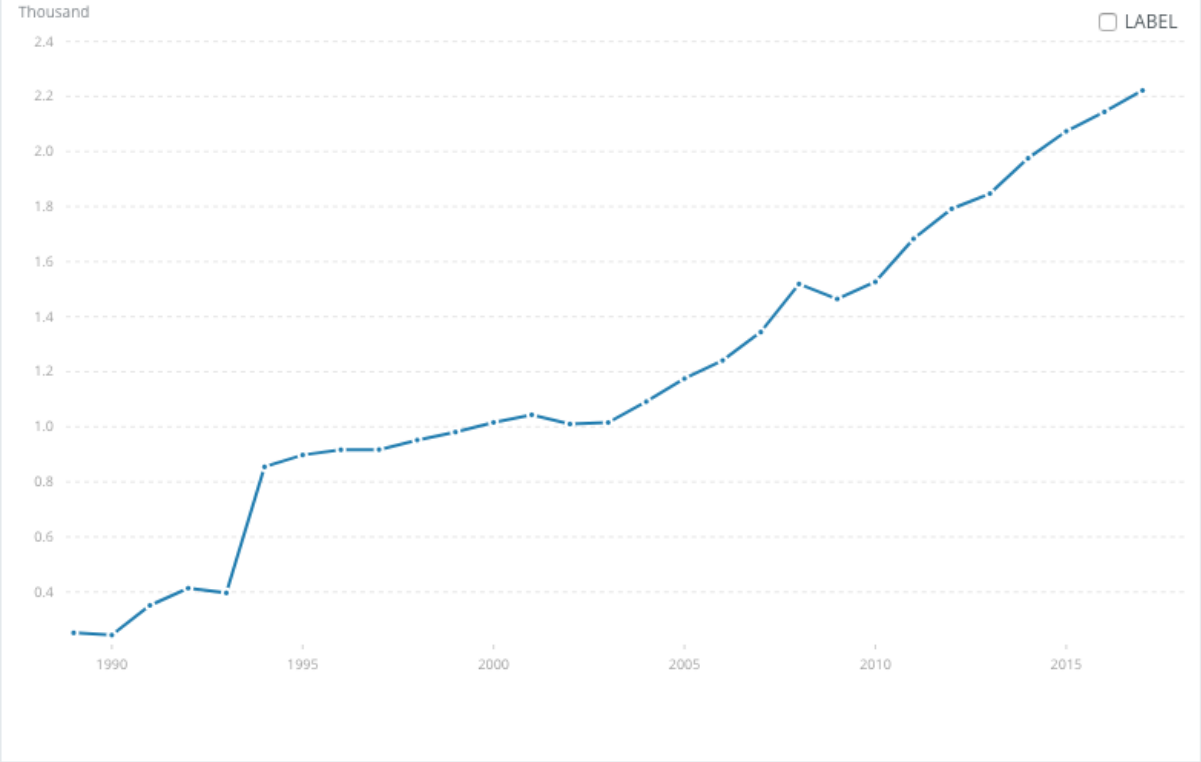

Figure 19. Nicaragua GDP per capita (current US$). Adopted from "World Bank," 2018f, Retrieved from https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=NI&view=chart

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