



저작자표시-비영리-변경금지 2.0 대한민국

이용자는 아래의 조건을 따르는 경우에 한하여 자유롭게

- 이 저작물을 복제, 배포, 전송, 전시, 공연 및 방송할 수 있습니다.

다음과 같은 조건을 따라야 합니다:



저작자표시. 귀하는 원저작자를 표시하여야 합니다.



비영리. 귀하는 이 저작물을 영리 목적으로 이용할 수 없습니다.



변경금지. 귀하는 이 저작물을 개작, 변형 또는 가공할 수 없습니다.

- 귀하는, 이 저작물의 재이용이나 배포의 경우, 이 저작물에 적용된 이용허락조건을 명확하게 나타내어야 합니다.
- 저작권자로부터 별도의 허가를 받으면 이러한 조건들은 적용되지 않습니다.

저작권법에 따른 이용자의 권리는 위의 내용에 의하여 영향을 받지 않습니다.

이것은 [이용허락규약\(Legal Code\)](#)을 이해하기 쉽게 요약한 것입니다.

[Disclaimer](#)

국제지역학 석사학위논문

**The Impact of the MDGs in the Decision  
Making Process regarding Development  
Oriented Policies for Education:  
The case of Nicaragua**

MDG가 교육 정책 개발에 미치는 영향:  
니카라과 사례연구

2016 년 2 월

서울대학교 국제대학원

국제학과 국제지역학 전공

강민지

**The Impact of the MDGs in the Decision  
Making Process regarding Development  
Oriented Policies for Education:  
The case of Nicaragua**

MDG가 교육 정책 개발에 미치는 영향:  
니카라과 사례연구

A Thesis Presented By

**Min Ji Kang**

Graduate Program in International Cooperation,  
For the degree of Master of International Studies

February 2016

The Graduate School of International Studies

Seoul National University

**The Impact of the MDGs in the Decision Making  
Process regarding Development Oriented Policies for  
Education: The case of Nicaragua**

- MDG가 교육 정책 개발에 미치는 영향:

니카라과 사례연구 -

지도교수 김태균

이 논문을 국제학석사 학위논문으로 제출함

2016년 2월

서울대학교 국제대학원

국제협력

강민지

강민지의 석사 학위논문을 인준함

2016년 2월

원 장 김종섭 (인)



부위원장 송지연 (인)

*Song Ji Yeon*

위 원 김태균 (인)



The Graduate School of International Studies  
Seoul National University

**THESIS ACCEPTANCE CERTIFICATE**

The undersigned, appointed by

The Graduate School of International Studies  
Seoul National University

Have examined a thesis entitled

**The Impact of the MDGs in the Decision Making Process regarding  
Development Oriented Policies for Education:  
The case of Nicaragua**

Academic Advisor: Professor Kim, Taekyoon

Presented by **MIN JI KANG**

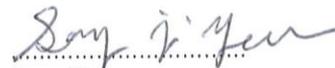
February 2016

Candidate for the degree of Master of International Studies and Hereby certify  
that is worthy of acceptance

Signature  
Committee Chairman

  
.....  
Kim, Chong-Sup

Signature  
Committee Vice-Chairman

  
.....  
Song, Jiveoun

Signature  
Committee Member

  
.....  
Kim, Taekyoon

## The Graduate School of International Studies Agreement on Original Contents Provision

Concerning my thesis, I agree that Seoul National University will provide it for the purpose of the following:

### 1. Matters Agreed Upon

- ① I agree on duplication of my thesis for the purpose of its preservation or online provision only if the contents are maintained as the original ones.
- ② I agree on digitalizing my thesis and reproducing/distributing, for internet or other communication networks, part of or the entire of the thesis for free of charge.

### 2. Author's Obligation

I will immediately notify the Graduate School of Seoul National University of a request for suspension or cancellation of public use of my thesis once any changes in the agreement are needed (such as transfer of copyright to a third party or approval of publication of my thesis).

### 3. Obligation of Seoul National University

- ① Seoul National University will use the copyright protection tool (DRM) in case that the university provides the thesis to external users.
- ② Seoul National University will take immediate follow-up actions once the author requests for a suspension or cancellation of public use of the thesis.

**Thesis Title: The Impact of the MDGs in the Decision Making Process regarding Development Oriented Policies for Education: The case of Nicaragua. MDG가 교육 정책 개발에 미치는 영향: 니카라과 사례연구**

Category of Degree: Master's Thesis

Department: Graduate School of International Studies

Student ID.: 2014-24341

Author: Min Ji Kang

Date of submission: February, 2016

**© Copyrights by Min Ji Kang 2016**

**All Rights Reserved**

## **ABSTRACT**

### **The Impact of the MDGs in the Decision Making Process regarding**

### **Development Oriented Policies for Education:**

The case of Nicaragua

**Min Ji Kang**

**2014-24215**

**International Cooperation**

**Graduate School of International Studies**

**Seoul National University**

Education is the subject promoted by the second Millennium Development Goal (MDG) and it is acknowledged as an important element for social, economic and political development. It is closely connected a nation's positive welfare, to more knowledgeable people and to low poverty, which is why Education poses as one of the greatest social policy instruments at the disposal of governments. With the closure of the MDGs time lapse and with the introduction of the Sustainable Development Goals (SDGs) the time to reap the fruits that the governments have harvested through national policies and programs that were oriented to achieve this goal has come. In this paper, Nicaragua's Strategic Plan for Education 2011-2015 implemented by the Nicaraguan government, will be analyzed and the results will be studied under the premises provided by the MDGs. This research is oriented to revise the analysis between human capital and education and how the Nicaraguan government has responded to the demands for education.

---

**Key Words: Education, Wage Premium, School Enrollment, School Completion, Literacy Rate, Primary Education, Secondary Education, Tertiary Education, Returns of Education, Social Expenditure, Children, Young Adults, MDGs**

## **LIST OF ACRONYMS**

|           |  |
|-----------|--|
| CEAAL     | Council for Adult Education for Latin America                      |
| ECH       | Encuesta Continua del Hogar  |
| FUNIDES   | Fundacion Nicaraguense para el desarrollo economico y social       |
| IADB      | Inter-American Development Bank                                    |
| IEEPP     | Conditional Cash Transfer  |
| INTERVIDA | Consejo Nacional de Evaluación de la Política de Desarrollo Social |
| MDG       | Millennium Development Goal  |
| MECD      | Ministerio de Educacion, Cultura y Deporte                         |
| MINED     | Ministerio de Educacion  |
| NDP       | National Development Plan  |
| NGO       | Non Governmental Organization                                      |
| PRSP      | Poverty Reduction Strategy Papers                                  |
| SDG       | Sustainable Development Goal                                       |
| SERCE     | Second Regional Comparative and Explanatory Study                  |
| SPE       | Strategic Plan for Education                                       |
| OECD      | Organization for Economic Cooperation and Development              |
| UNESCO    | United Nations Educational, Scientific and Cultural Organization   |
| WB        | World Bank   |

## TABLE OF CONTENTS

|   |    |
|---|----|
| <b>ABSTRACT</b> .....   | 7  |
| List of Figures, Tables and Figures.....                          | 9  |
| 1. Introduction.....  | 12 |
| 1.1. Research Background.....                                     | 12 |
| 1.2. Research Motivation.....                                     | 13 |
| 1.3. Research Question.....                                       | 16 |
| 1.4. Hypothesis.....  | 17 |
| 2. Literature Review.....   | 19 |
| 2.1. Human Capital Theory.....                                    | 19 |
| 2.2. MDGs and its limitations: MDG.....                           | 22 |
| 2.3. Educational Development Strategies.....                      | 25 |
| 2.3.1.1. Nicaragua’s education structural problems.....           | 25 |
| 2.3.1.2. Strategic Plan for Education 2011-2015.....              | 26 |
| 3. Methodology.....   | 30 |
| 4. Findings and Empirical Analysis.....                           | 32 |
| 4.1. Analysis of results from the MDGs indicators.....            | 32 |
| 4.1.1. School Enrollment Rate.....                                | 33 |
| 4.1.2. Completion Rate.....                                       | 40 |
| 4.1.3. Literacy Rate.....   | 49 |
| 4.2. How educated is Nicaraguan labor?: Quality of education..... | 50 |
| 4.3. Does Education Pay in Nicaragua.....                         | 59 |
| 5. Discussion and Conclusions.....                                | 79 |
| References.....   | 82 |
| Appendix.....   | 87 |

## LIST OF FIGURES AND FIGURES

### List of Figures

|   |    |
|---|----|
| Figure 1. Added-variable Plot of Growth and Years of Schooling without Test-score Controls.....           | 21 |
| Figure 2. Gross, Net and Adjusted Enrollment 2001-2010.....   | 34 |
| Figure 3. Net Rate for school enrollment, 2007-2010.....  | 34 |
| Figure 4. Gross Rate for school enrollment, 2007-2010.....  | 35 |
| Figure 5. Nicaragua’s population and school-age population (2005-2015) .....                              | 36 |
| Figure 6. Net rate for Secondary Education 2004-2013.....   | 39 |
| Figure 7. Percentage of Completion rate of Primary Education for Nicaragua.....                           | 41 |
| Figure 8. Percentage of Completion rate of Primary Education for Nicaragua per Poverty Level.....         | 42 |
| Figure 9. Completion Rate for Primary school. Ages 15 to 19.....  | 43 |
| Figure 10. Desertion of the school year (2001-2010) .....   | 44 |
| Figure 11. Desertion of the school year Academic Level 2002-2010.....                                     | 45 |
| Figure 12. Completion Rate per Educational Level 2007 2010.....   | 48 |
| Figure 13. Completion of Secondary Education Latin America. Young adults between 20 and 24 years old..... | 49 |
| Figure 14. Academic Performance Results.....  | 52 |
| Figure 15. Results from SERCE examination.....  | 54 |
| Figure 16. Teacher Qualifications per Educational Level.....  | 55 |
| Figure 17. Percentage of Primary and Secondary Teachers trained.....                                      | 56 |
| Figure 18. Income Quintile and years of schooling per socioeconomic quintile.....                         | 60 |
| Figure 19. Mean Years of Education in Nicaragua vs LAC (1994-2004).....                                   | 61 |
| Figure 20. Years of complete education (cohort 23 to 29 years old) and Income Level.....                  | 64 |
| Figure 21. Wages above the poverty line require at least 11 years of education.....                       | 65 |
| Figure 22. Additional Public Spending Needed to achieve the MDGs by 2015.....                             | 69 |
| Figure 23. Private and Social returns (work income) .....   | 73 |
| Figure 24. Estimated return rate from education complete vs. incomplete.....                              | 75 |

## List of Tables

|  |    |
|--|----|
| Table 1. Nicaragua: Prospects for Attaining Long-Term PRS Goals and MDGs.....  | 33 |
| Table 2. School Enrollment Depending on Poverty Level.....   | 37 |
| Table 3. Reasons to Not Enroll depending on Poverty Level.....   | 38 |
| Table 4. Annual Expenditure on Education depending on Poverty Level.....   | 38 |
| Table 5. Enrollment rates in the Atlantic Region fall behind nationally,<br>especially for preschool and secondary school..... | 40 |
| Table 6. Reasons for not attending to class. Group between 7 and 23 years old.....   | 46 |
| Table 7 Literacy Rates. 2001-2005.....   | 50 |
| Table 8. Scores from general examination on the subject of Mathematics.....  | 53 |
| Table 9. Wages per educational level, 2007-2009 (nominal and real).....  | 57 |
| Table 10. Pupil/Teacher ratio in Primary and Secondary Education (2000-2010).....  | 58 |
| Table 11. Average years of education based on residential area and age (15-64y/o).....   | 62 |
| Table 12. Cost by student per level (2009).....  | 70 |
| Table 13. Returns Rates of education of employees according to their educational<br>levels.....                                | 75 |
| Table 14. Salary Rates and Education costs per educational level (2010).....   | 76 |

# 1. Introduction

## 1.1. Research Background

The Human Development Index was created in virtue of providing a measurement system that would estimate the average of three different dimensions that exhibit achievements regarding human development. The first reports from the Human Development Index dating since the early 80s, presented that Nicaragua's overall score reached 0.483 on its scale, which situated it in fifth place among the Central American countries, followed closely by Honduras and Guatemala, while Panama, Costa Rica and Belize placed on top of the disputed region. According to the Program 'Estado de la Nación', 35 years after the initial evaluation, Nicaragua has moved 0.614 points up the ladder, this time however, positioning itself in the last place among its Central American neighbors and placing number 132 out of 187 countries (Programa Estado de la Nación, 2014).

In terms of poverty, Nicaragua is the second poorest country in Latin America; with a population of 5.8 million people, from which 47 percent live under the national poverty line, Nicaragua remains in the lowest scale of development when compared to other countries in the region.

These statistics show that Nicaragua suffers from chronic poverty. It is a country that has fallen under the poverty trap and keeps on spiraling over this perpetual cycle without being able to decipher adequate solutions to get out of the incessant reaction chain of under development.

While Nicaragua has been exponentially rising and tackling down its development issues, its general outlook seems to be focused on direct economic growth, paying less attention to peripheral development areas such as education.

The challenges that Nicaragua currently faces are countless. To attain socioeconomic development it is crucial to increase the country's productivity and competitiveness to achieve better market participation, articulate human capital, attain formal high quality jobs that raise wages and integrate education with technology and innovation. Education is a primordial and strategic factor, an indispensable precondition for social and economic development.

Various studies determine that the correlation between a country's economic growth and its progress in educational system is a positive one. It is for this reason that the United Nations focused on achieving universal primary education for all children by 2015. Not only does education help in the formation of a more literate and educated society but also at the same time, it helps countries boost their economic growth through the acquisition of better skills and more knowledge. Unfortunately, in an ironic twist, the focus the international community has given to primary education has resulted in problems in relation to secondary school access, evidenced by the chronic shortage of secondary school enrollment and low completion rates across developing countries.

Therefore, for a country that finds itself chained to the cycle of poverty such as Nicaragua, it is important to render their focus on the construction of human capital through education –including pre-school, primary, secondary, technical and tertiary education-, as it is the prime instrument to secure the process of human capital.

## **1.2. Research Motivation**

In 2000, Nicaragua agreed to the UN's Millennium Development Goals, which hold the mission of overcoming poverty, where Nicaragua is identified as the second

poorest country in Latin America. Nicaragua bounded to commit its agenda to reaching the goals established and to revitalize the country's profile.

In the context of the alignment of poverty reduction strategies with the Millennium Development Goals (MDG), there is a clear need for the assembly of strong human capital that will accelerate the rise on social mobility and open up the economy for a knowledge-oriented market.

As the MDGs come to an end and the Post 2015 Development Agenda starts to unfold, the time to evaluate the progress made within the MDGs framework has come. In the case of Nicaragua, despite positive outcomes presented on the MDGs official tracking system, Nicaragua's tangible achievements display more problems than what it is accounted for.

The second goal of the MDGs looks to achieve universal primary. It presents three different indicators: a) Net percentage of school enrollment; b) Completion Rate<sup>1</sup> and c) Literacy Rate (15-24 years old).

On an international level, evidence suggests that school and education received inside the educational entity (including cognitive, learning and social skills) impacts greatly on wages and employment, subsequently transforming the labor market within a country. (Heckman, Stixrud and Urzua, 2006; Currie and Thomas, 1999; Murnane, and Willett Levy, 1995).

For the case of Latin America, it appears to be that the variables between low economic growth rates and low levels of cognitive skills are highly correlated (Hanushek & Woessmann, Do better schools lead to more growth?, 2012). In this context, it becomes a concern that Nicaragua is the only country in Central America with mismatching statistics. While it accomplishes a steady increasing school

---

<sup>1</sup> This can also be substituted by the proportion of pupils starting grade 1 who reach grade 5

enrollment rate (primary level), it also counts with the largest percentage of children dropping out of primary school at 11,4%. In other words, only five out of ten children will complete primary education. Additionally, secondary education rates, both in terms of enrollment and completion are remarkably low and the number of children/adolescents outside the education system counted for more than fifty thousand children on 2010.

The facts mentioned above lead to question which time-term the government is looking to prioritize the most: a) short-term to medium achievements based on reaching the international MDG standards or b) medium to long-term goals directed to future outcomes.

Moreover, the Inter-American Development Bank (Näslund-Hadley , Meza, Arcia, Rápalo , & Rondon, 2012) presented a paper analyzing the main issues and challenges for education in Nicaragua, in which they identified four main concerns:

1. Institutional framework with coordination problems
2. School attendance is the lowest in Latin America
3. Nicaragua holds lowest completion rates in Latin America
4. Learning quality is among the lowest ones in Latin America

Added to these main problems, the impact of low level of education that suffers most of the workforce is extreme. The analysis of the structure of the Nicaraguan labor market also shows that almost seven out of ten jobs in Nicaragua are precarious jobs in the informal sector. Mostly, these jobs are based on self-employment and are unpaid jobs, mainly performed by family members, and employees of micro informal units predominate. These jobs generate very low income, which keep those who work on them under the poverty line. Thus, Nicaraguan economy is generating, mainly, only these types of jobs that can absorb a workforce with such characteristics. This translates

into an obtainment of poor human capital with unskilled capabilities and perpetuates the creation of low paying jobs that consequently reduce the chance of Nicaragua improving their poverty rates.

Based on the assumptions of the human capital theory and on the income maximization of wages for the Nicaraguan population depending on educational level, this paper focuses on the positive correlation between higher education and higher wages. The main reason for carrying out this study is to take a deeper look into the enclosed approach that the Nicaraguan government has implemented to the improvement of education since it has been focusing primarily on the indicators proposed by the MDG 2.

This paper is organized into five parts. Section II presents the literature review of previous studies on the education. Section III shows the methodology utilized to measure the income maximization of Nicaraguan wages. Section IV entails an empirical analysis based on the results obtained and an interpretation of their significance for the Nicaraguan education-labor market. Section V closes the research by providing some discussion and conclusions based on the empirical analysis. It also touches upon the limitations present in this research.

### **1.3. Research Question**

The main purpose of this research is to provide an analytical evaluation over the structural changes in development policies oriented for children's education based on the MDG's agenda to assess Nicaragua's strategy on improving education and subsequently reducing poverty.

Under the MDGs framework, the Nicaraguan government has reformed its

development-oriented policies, including PRSP, which has allocated a special restructuring for education policies, in order to fulfill the indicators within Goal two of the MDGs.

Do the reformative efforts of the Strategic Education Plan 2011-2015 promise sustainable and transformational change for the Nicaraguan education system or does it aim for a mere perfunctory fulfillment of the MDG indicators?

#### **1.4. Hypothesis**

H1:

The reformed policies are growth-based oriented and are implemented along a short-term vision. While it offers fast solutions, it leaves outside of the panorama factors such as quality of education and it does not discern between children located above and beneath the poverty line.

H2:

The focus on primary education aligns with the country's Poverty Reduction Strategies because primary education provides sufficient human capital capabilities to increase the country's economic and social development and reduce poverty rates.

H3:

While primary education is essential for the basic alphabetization of the population, this approach is short-term sighted. Taking into consideration that to exceed the national threshold of poverty Nicaraguan people need to receive a labor income of at least 11 years of schooling (complete secondary), it is important to push forward

policies that motivate students to not only enroll but complete secondary education to reduce poverty and build human capital.

## 2. Literature Review

### 2.1. Human Capital Theory

In an era where technology has changed the paradigm of the world, a new weapon that holds immeasurable value and changes all strata of human life arises: knowledge. The obtainment and control of knowledge has become one of the most important abstract assets necessary to push forwards for development. It is enveloped in the core of trend changing areas such as technology, globalization, market complexity and business. These millennial tendencies have indirectly pushed toward the search for those who own this particular asset to boost competitive aptitudes and productivity; people who possess knowledge capabilities come as the results of investment in human capital.

Most sources reach consensus on the definition of human capital. The Organization for Economic Cooperation and Development (Organization for Economic Co-operation and Development, 2001) describes human capital as “*the knowledge, skills, competencies, and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being.*” Marimuthu et al. (Marimuthu, Arokiasamy, & Ismail, 2008) define it as “*the knowledge and training required and undergone by an employee that increases the individual’s capabilities in performing activities of economic values.*” Oxford English Dictionary depicts it as “*the skills the labor force possesses and is regarded as a resource or asset.*” For this research, the concept of human capital is defined as the set of skills, knowledge, training and experiences that contribute to the increase on an individual’s productivity, therefore boosting his or her value in the labor market.

To dive further into this concept, it is important to study the theory behind it. Theodore W. Schultz proposed the idea behind this theory in 1961. He defines human

capital theory (Schultz, 1961) as knowledge and skills obtained by people as capital in the process of vocational and technical education. Meaning that there is an initial investment on the acquisition and improvement of a set of skills and knowledge that generates returns in the form of income. According to Babalola(Babalola, 2003), there are three main justifications behind making an investment in human capital:

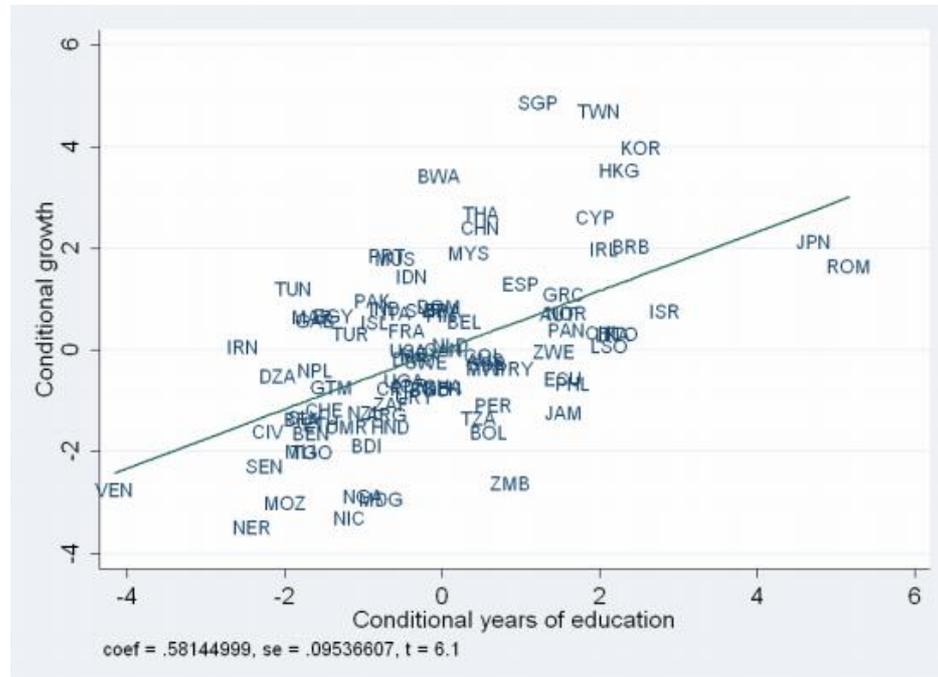
1. The new generation must be given the appropriate parts of the knowledge which has already been accumulated by previous generations;
2. New generation should be taught how existing knowledge should be used to develop new products, to introduce new processes and production methods and social services;
3. People must be encouraged to develop entirely new ideas, products, processes and methods through creative approaches.

For a more holistic understanding, it is useful to comprehend how human capital is assembled and which are the main sources that embody it. Acemaglu(Acemoglu, 2012) proposes five different sources of human capital: Innate ability, schooling school quality and non-schooling investments, training and pre-labor market influences. For practical purposes, this study focuses on the aspect of education and schooling.

Human capital theory accentuates the role that education has on the maximization of productivity for workers through the accumulation of cognitive skills and the combination of innate abilities and investments in schooling(Olaniyan & Okemakinde, 2008, pp. 157-162). In this sense, based on Backer's assumptions, it is inevitable that education and economic development are highly correlated because the instrument that facilitates the construction of human capital is education. As Hanushek and Wößmann present on their paper, there seems to be a strong correlation between economic growth and years of schooling. They calculated the average annual rate of

growth in GDP per capita over a 40-year period against years of schooling at the beginning of the period for a sample of 92 countries<sup>2</sup>(Hanushek & Wößmann, 2007).

Figure 1. Added-variable Plot of Growth and Years of Schooling without Test-score Controls



Source: Hanushek and Wößmann (2007)

Figure 1 implies that each year of schooling is statistically significantly associated with a long-run growth rate that is 0.58 percentage points higher. Education is a key component because it represents the means in which knowledge and skills are introduced and developed through. Education also quantifies how much knowledge a person has reached or not depending on their level of education based on the number of schooling years he or she has received.

An advocator for education as a form of investment for future social mobility is Nobel prize-winning economist Gary S. Becker. Becker emphasizes that: “*human capital analysis starts with the assumption that individuals decide on their education,*

<sup>2</sup>Both growth and education are expressed conditional on the initial level of output, to account for the significant conditional convergence effect

*training, medical care, and other additions to knowledge and health by weighing the benefits and costs. Benefits include cultural and other non-monetary gains along with improvement in earnings and occupations, while costs usually depend mainly on the foregone value of the time spent on these investments.*”(Becker, 1992, p. 385) He goes to assure that for an individual who has weighted the costs and benefits of this investment and has actively decided to continue on investing, foregoing the opportunity cost of immediately earning a wage, his or her income will be higher than the average wage rate as a return for the willingness to ‘pay’ for the extra value that education and training hold as additional and self-improving assets that will ultimately increase productivity. It can be implied then, that human capital becomes a premium labor force, since it is a more experienced and educated labor.

Nonetheless, several authors disagree with the idea of education being the most important variable in achieving human capital. Levin and Kelley(Levin & Kelley, 1994) question the payoffs from increased education and attribute the increase in productivity to other factors such as contracts, management practices and training. Similarly, Spence argues that due to the lack of criteria to attribute to productivity, education stands as the only way to measure the potential productivity of a worker(Spence, 1973). Nonetheless, while there is criticism against the idea of education as a driving force for the creation of human capital, its major role is irrefutable and marks the basis for economic growth and development.

## **2.2. MDGs and its limitation: MDG 2**

Based on the previous premises regarding education as a mechanism to achieve human capital, it is plausible that countries seek to enhance their human capital stock

to create a bigger, wider and more dynamic markets where labor is highly productive, hence upgrading the overall market setting.

Mincer's model of human capital (Mincer, 1958) measures the effects of gains in income through education relative to the opportunity costs in 'lost' work time in attaining higher education levels. This translates to the idea that the higher the education, the higher the future return. Considering these results, the pursuit for human capital has become an essential aspect in development agendas; therefore, it is evident that human capital development has a strong impact for educational policies. Perceived as an engine of growth, education holds primary stance when development agendas are formed. The most prominent modern example is the Millennium Development Goals (MDGs) and its dedication to the goal of education. Established on September 2000 by United Nations, the MDGs proclaimed eight universal goals that sought to foster sustainable development and achieve a series of objectives by 2015.

It is undeniable that the MDGs established a backbone to measure the route of global trends. The MDGs true significance relies on two aspects: 1) recognition of the socio-economic problems consequence of uncontrolled economic growth due to globalization and trade openness and 2) the establishment of global goals binding to every country focused on human well being. Overall, the MDGs looked to improve conditions for people and pressured this agenda through the set up of a deadline. They provided a clear vision of what a desirable state entitles and should be.

Nonetheless, while the MDGs served appropriately as a prototype for the realization of a global agenda, they suffer from severe internal flaws both in their construction and implementation. A research paper for the UN System Task Team on the Post-2015 UN development agenda exposes the main and most crucial limitations of the MDGs. The paper reflects: *"In terms of conception, there are two basic problems. First, the MDGs*

*specify an outcome but do not set out the process which would make it possible to realize the objectives. In other words, the MDGs specify a destination but do not chart the journey. Second, the MDGs are stipulated without any reference to initial conditions, but where a country gets to in any given time horizon depends at least, in part, on where it starts out from. Global goals meant as norms, but often read as targets, also do not recognize that there may be significant differences in national priorities. In sum, the MDGs focus on a comparison between an undesirable state and a desirable state, but do not recognize the importance of the process of change, or the transition path, from one state to the other. This implicit separation of ends and means compounds the problem. But that is not all. There is another fundamental limitation. The MDGs are set out in terms of aggregates or averages which often conceal as much as they reveal because there is no reference to distributional outcomes.”(Nayyar , 2012, pp. 6-7). Nayyar points out relevant points that address major weaknesses of the MDGs.*

One of the aspects that had underlying negative limitations was MDG 2, which looks to achieve universal primary education. Fehling et.al express the most basic limitations for this particular goal. The utmost crucial limitation for this MDG is that it focuses mainly on primary education, without pushing for further education –secondary and tertiary-. This stands as an impediment to achieve real human capital because it is concentrated in the most basic strata of education. Knudsen acknowledges that the respective lower levels of schooling are an input for the subsequent higher levels of education(Knudsen, 2008). However, he differentiates between the outcomes from primary education and secondary education. He continues his argument by explaining: “*secondary education could have an effect on economic growth via skills that help to adopt (foreign) technologies and knowledge and consequently increase capital investment”* (Knudsen, 2008, p. 108). Primary education serves as the pillar for any

kind of education; without it, there would be no foundations in order to keep on moving up the economic and social ladder, however, it is important to remember that education is not a single experience but rather a continuing process which should be unceasingly promoted.

Under the premise of long-term sustainable development, the construction of human capital should be prioritized and the goal regarding education should not ignore the spheres of secondary and post-secondary education. Considering the premise of human capital theory, when a population is highly educated, it stands for a productive population or a population with heavy labor baggage. In other words, to emphasize the objective just on primary education means that the population will obtain a certain level of knowledge but not the necessary one to achieve high quality human capital.

Besides this, there are other problems mentioned, such as the poor quality of education, the lack of school access, the low ratio of pupils per students, which are not measured within the indicators of goal. Unfortunately, it ironically turns the positivity of the goal into a one-sized-fits-all approach that delivers a half-assessed target with no clear vision for the long-term development and no improvement of human capital. This can be especially hurting to the process of policy making; creating a policy that dismisses such limitations can only lead to the formation of a policy taking a wrong approach at building human capital. For developing countries that are trying to decrease their respective poverty lines and produce a more productive and educated population, it is crucial to choose the correct tactic that responds to their particular needs.

### **2.3. Educational Development Strategies**

#### **2.3.1.1. Nicaragua's education structural problems**

To achieve the ultimate goal of building a better and more qualified education, the government of Nicaragua has had a series of plans directed to the development of the education. However, it is important to understand the most basic of problems in the country to analyze the validity of their solutions.

The Inter-American Development Bank (Näslund-Hadley , Meza, Arcia, Rápalo , & Rondon, 2012) presented a paper analyzing the main issues and challenges for Nicaragua, in which they identified four main concerns:

5. Institutional framework with coordination problems
6. School attendance is the lowest in Latin America
7. Nicaragua holds lowest completion rates in Latin America
8. Learning quality is among the lowest ones in Latin America

#### 2.3.1.2. Strategic Plan for Education 2011-2015

Based on these chronic challenges, the Nicaraguan government sets out to seek for three commitments regarding education:

1. A national literacy campaign
2. Free access to Subsystem Basic and Secondary Education
3. A sustainable educational change with quality, equity, entrepreneurship, research, innovation and contextualized to the beneficiaries.

Nonetheless, these commitments present one major problem at the moment of implementation: the lack of coherence among programs. Unlike other countries in the region, education in Nicaragua is solemnly controlled by the state; no other entities are allowed to convey in it besides the Ministry of Education (MINED), which is the implementing organism. Since 2007, Nicaragua has had two ministers running the

MINED and has executed six educational strategies that aim to reduce the dropout rate and ensure quality education(Castillo Bermudez, 2014).

Despite the many educational strategies that the Ministry of Education has tried to implement, the school system still fails to solve the problems of access, coverage and quality of education. One important reason for this resilient failure falls under the incoherency among the proposed programs due to the constant change in high rank positions within the Ministry. The MINED has been reluctant to show the results of each different program and it is indisposed of providing information regarding tuition and other educational indicators that would prove the validity and effectiveness of their policies. The inconsistency and lack of transparency causes instability in the school system because Nicaragua does not define a clear and long term policy that displays the aim for the future of education. Yadira Rocha, representative of the Council for Adult Education for Latin America (CEAAL) in Nicaragua, denotes that until the Ministry reaches a long-term National Education Plan, defined and agreed by different sectors, every change will bring disorders because there is currently no plan indicating the path for sustainable education(Belli Pereira & Asensio Flores, 2015, p. 5).

Nonetheless, despite this structural issue and the lack of coordination, educational plans were formed and executed. The most recent national plan called the Strategic Plan for Education 2011-2015 engages the three main principles and presents programs for education. It reaffirms the continuation of the policies from the 2007-2011 Plan(Näslund-Hadley , Meza, Arcia, Rápalo , & Rondon, 2012, pp. 17-18):

- More education: aimed at reducing the illiteracy of the population of 15 years old, and increase access and coverage Educations Preschool, primary, secondary, special and initial teacher training.

- Better education: mainly aimed at transforming the educational curriculum, as well as training and educational training.
- Other education: aimed at transforming the values of education and system education.
- Participatory and decentralized educational management: which encourages participation citizenship, fathers and mothers, educators and students, NGOs, local governments, media and international aid agencies in the formulation and management of educational policies.
- All educations: which coordinates the various subsystems and components education system, in a global and integral whole.

Notwithstanding, even with the aims for a better education within the plan, the elements for improving the quality of education are rather limited, especially because of the primary education focus based on the MDG goal and the lack of long-term vision. In this regard, Vijil expresses that: *“Education is always a long-term process and we won’t get anywhere if we continue responding with short-term policies. (...) We have to abandon a whole pile of distracters in the educational system and put together policies aimed at achieving those goals. But if we don’t know where we’re going or what we want... Why were educational policies imposed on us from outside during the nineties? Because we didn’t have—and still don’t have—our own vision. We have to develop a national vision that translates into state education policies that survive beyond individual governments and the changing of ministers and officials.”*(Vijil, 2008)

These problems are the foundation for this research. As Nicaragua tries to improve their educational system and get out of the bottom of negative results among the Latin American region, Nicaragua must refocus on the construction of human

capital to produce more desirable and strong labor force that will revitalize not only the Nicaraguan economy and market but who can provide a pivotal change in their society and general outlook.

### **III. Methodology:**

As previously argued, one of the fundamental flaws that the Strategic Plan for Education 2011-2015 suffers from is its one-size-fits-all approach consequence of the MDG's guideline. As the goal focuses predominantly on primary education, so do the Plan's main objectives. Primary education is the pillar to a societal transformation; a literate and educated population holds more value for an economy than unskilled labor. Thus, the increase in human capital, not only in the primary stages of education but of post-primary ones, is needed.

To proceed with the research and to analyze the relationship between income and years of school based on the human capital theory, this study focuses on an income maximization analysis based on the results given by FUNIDES<sup>3</sup>(Laguna & Porta, 2013) and their respective analysis on return for education in Nicaragua.

This research centers on measuring Nicaragua's income relative to the years of schooling. The main argument rests on the assumption that every household has a utility function, which depends on the human capital of its children and the consumption of all other goods and services. An investment in another year of schooling raises a child's human capital at the cost of reduced consumption of other goods and services.

The approach was based from Jacob Mincer's model, which will be used as a reference model to start the analysis. In 1974, Mincer modeled the natural logarithm of earnings as a function of years of education and years of potential labor market

---

<sup>3</sup>Fundación Nicaragüense para el Desarrollo Económico y Social (FUNIDES). Nicaraguan Foundation for Economic and Social Development

experience to determine the relationship between income and school. He noted the formula as:

$$\ln y = \ln y_0 + rS + \beta_1 X + \beta_2 X^2$$

where  $y$  is earnings ( $y_0$  is the earnings of someone with no education and no experience);  $S$  is years of schooling;  $X$  is years of potential labor market experience.

Mincer's equation implies that the profitability of the years of study is linear in time, which allows understanding the average return of education on individuals, but a major restriction is that it does not account for the profitability of years of education according different educational levels. Heckman, Lochner and Todd (Hanushek, Lochner, & Todd, 2003) identified it as one of the main adjustments that need to be done in studies on the returns to education. Taken this into consideration, FUNIDES adjusted the equation to measure the income per educational level, which utilized formula can be seen on the Appendix.

Based on the results from the FUNIDES report and taking data from the Nicaraguan LSMS 2009, this paper concentrates on understanding the income maximization per household in terms of returns generated by schooling years and different educational strata.

## **4. Empirical Analysis:**

### Opportunities in education

Education is an elemental key for the economic growth and development of a country. From the micro level perspective, education presents opportunities to have social mobility and climb the poverty ladder; from a macro level viewpoint, education is the instrument that allows the construction of human capital that increases national productivity and competitiveness, thus elevating the economic and social areas of the country. This section will be divided into three main subtopics: The first subtopic will provide an analysis of the results from the current schooling system (Strategic Plan for Education 2011-2015) based on the three MDG indicators. Second, the study will look into how educated the Nicaraguan labor force is and how the lack of quality in education affects workers in Nicaragua. The last section focuses on the returns of education and attempts to answer if investment in education pays in Nicaragua.

### **4.1 Results from the MDG indicators**

Goal 2 from the MDGs focused on achieving universal primary education. Taking this goal as a vision for their national development policies, Nicaragua launched its PRS in December 2005 called the National Development Plan (NDP) that included goals, targets and indicators in complete alignment to the MDGs. The 2007 incoming government undertook the development plan; for education, the government redefined the strategies by ‘cutting perverse neoliberal trends that ruled over 16 years and damaged intensely the educational system’(MINED, 2011) and creating new strategy plans.

#### 4.1.1 School Enrollment:

Nicaragua's commitment to the MDGs proposed a goal of a net primary enrollment of 100% by 2015. As Table 1 shows, based on the forecasts presented from the Poverty Assessment Report, the World Bank classified this goal as 'unlikely' to be achieved, which was worrisome due to the long-term consequences in building human capital capabilities.

Table 1. Nicaragua: Prospects for Attaining Long-Term PRS Goals and MDGs

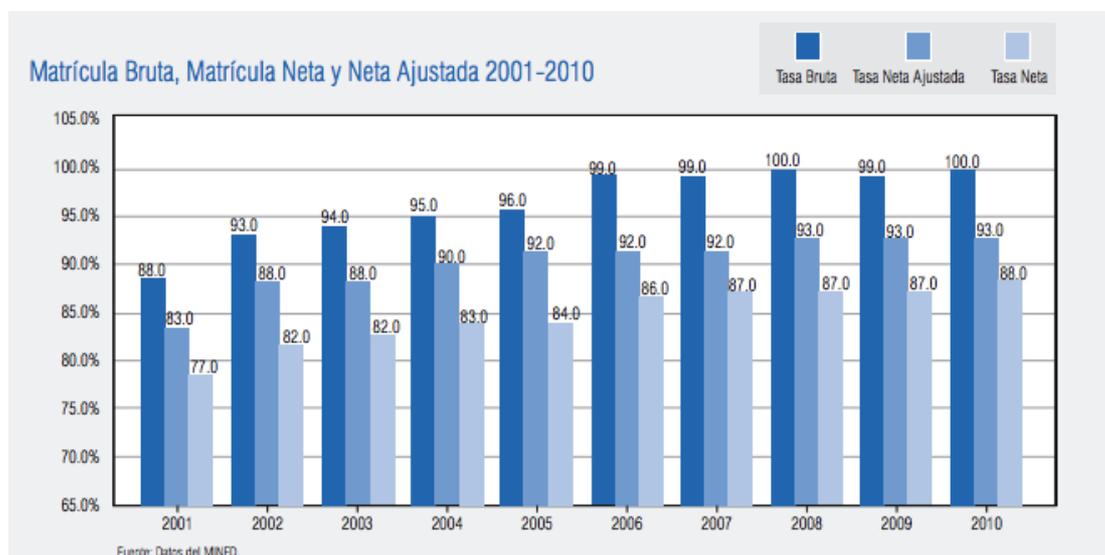
| PRSP goals (MDGs)                            | PRS-I <sup>a</sup> | PRS-II <sup>b</sup> | Actual<br>2005    | Target<br>PRS-II | Forecast<br>2015 <sup>c</sup> | Target<br>PRS-II | Target 2015<br>will be<br>achieved? |
|--|--------------------|---------------------|-------------------|------------------|-------------------------------|------------------|-------------------------------------|
|  | Base<br>1993       | Base<br>2001        |                   | 2010             |                               | 2015             |                                     |
| Extreme Poverty (%)                          | 19.4               | 15.1                | 14.9              | 11.5             | 11.0                          | 9.7              | Possible                            |
| Net Primary Enrollment (%)                   | ...                | 82.6                | 84.1              | 90.5             | 87.0                          | 100              | Unlikely                            |
| Infant Mortality (per 1,000 live births)     | 58                 | 31                  | ...               | 27               | 24.1                          | 20               | Possible                            |
| Under-Five Mortality (per 1,000 live births) | 72                 | 40                  | ...               | 33               | 31.2                          | 24               | Possible                            |
| Chronic Malnutrition (%)                     | 19.9               | 17.8                | 17                | 12.8             | 11.7                          | 7                | Unlikely                            |
| Maternal Mortality (per 100,000 live births) | 160                | 88.6                | 95.7 <sup>d</sup> | 63               | 80.3                          | 22               | Very unlikely                       |
| Access to Reproductive Health Services       | ...                | 16.1                | 12.9              | 29               | 21.3                          | 100 <sup>e</sup> | Very unlikely                       |
| Access to Water (%)                          | ...                | 75.8                | 71.5              | 83.5             | 76.4                          | 90               | Unlikely                            |
| Access to Sanitation (%)                     | ...                | 87.1                | 55.9 <sup>f</sup> | 90               | 60.0                          | 95 <sup>g</sup>  | Very unlikely                       |
| Illiteracy Rate (%)                          | 19                 | 18.7                | 18.4              | 15.6             | 15.3                          | 10               | Unlikely                            |

Source: PRS-I, LSMS 2005, PRS-I 1st and 2nd Progress Reports, PRSP-II, and own estimates. (a) MDGs base year is 1990, Nicaragua's PRS-I explains data was not always available, then closest year was used, for most cases 1993 or 1994, except malnutrition and illiteracy 1998; (b) PRS-II base year is 2001 for poverty, infant and child mortality, malnutrition and illiteracy, or 2004; (c) Estimated on the basis of SimSIP elasticities for Nicaragua and LAC, methodology cited in World Bank Technical Paper No.467; (d) 2006; (e) Target for 2010 is 29 from a 16.1 in 2004; (f) Actual 2005 excludes untreated latrines; (g) National target.

Source: Nicaragua Poverty Assessment (2008). World Bank

However, Nicaragua has made significant and considerable progress in the area of school enrollment. According to the LSMS 2005, Nicaragua's population of children and adolescents of school age is 37.1% of the total population, which means that about 4 out of 10 Nicaraguans should be incorporated into the education system, either in preschool, primary or secondary education. As Figure 1 presents, in the last couple of years, Nicaragua has had a remarkable increase in school enrollment rates.

Figure 2. Gross, Net and Adjusted Enrollment 2001-2010

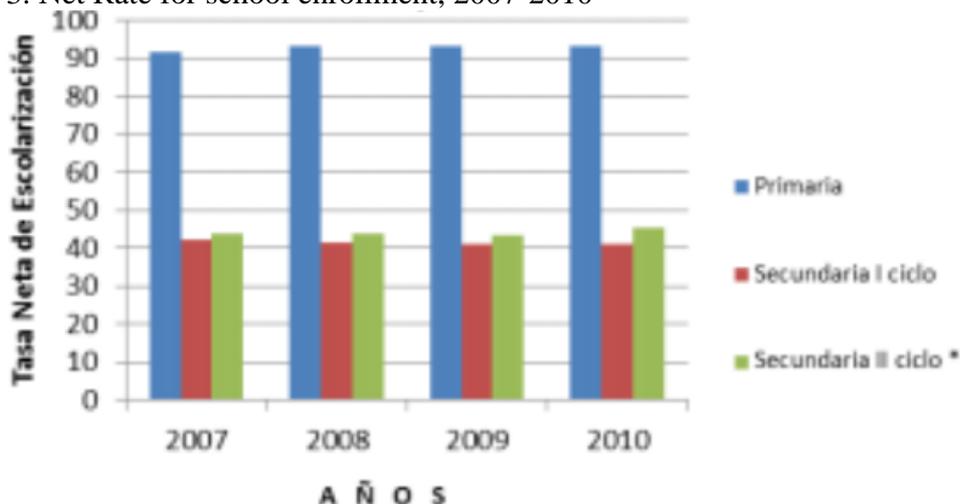


Source:(Instituto de Estudios Estrategicos y Politicas Publicas, 2012)

As one can understand, since 2001 until 2010, Nicaragua has had an exponential increase in their gross, net and adjusted net enrollment rates. As the Strategic Plan for Education 2011-2015 presents, for net enrollment rate, out of 100 students between 6 to 11 years old, 93 were enrolled either in primary school or secondary school<sup>4</sup>.

<sup>4</sup> For Nicaragua, primary school starts at the 1<sup>st</sup> grade and finishes on 6<sup>th</sup> grade. Secondary education goes from 7<sup>th</sup> grade (1 Cycle including 8<sup>th</sup> and 9<sup>th</sup> grade) until 11<sup>th</sup> grade (includes 10<sup>th</sup> and 11<sup>th</sup> grade). In 2005, there was an educational change in the entrance age to primary school from 7 years old to 6 years old to fight against desertion and repetition years causing an incident of extra age which can be seen in the Gross Rate indicators that surpass a 100%.

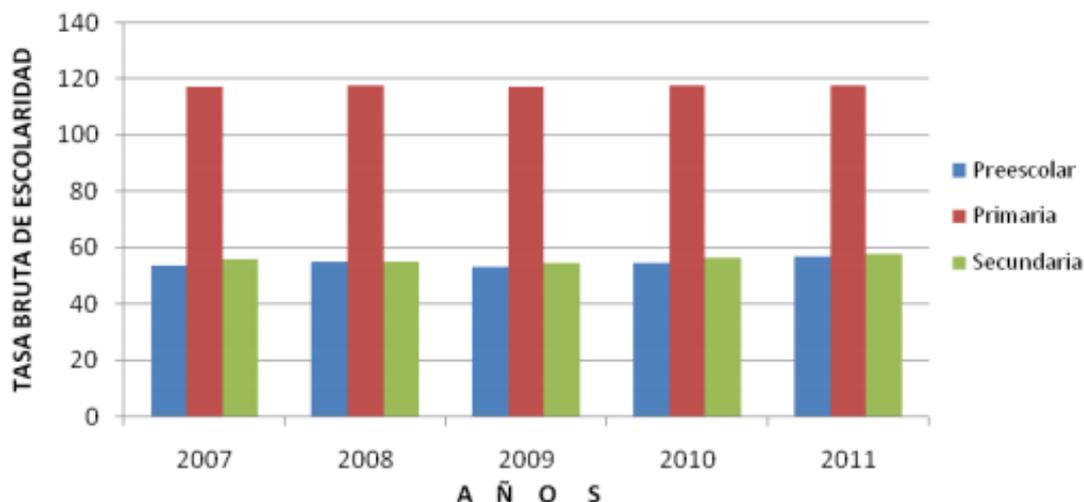
Figure 3. Net Rate for school enrollment, 2007-2010



Source: MINED. Strategic Plan for Education 2011-2015.

As for the rest of education, in terms of gross rate enrollment, pre-school rates (from ages 3 to 5) reach 55% while secondary education reaches 57%.

Figure 4. Gross Rate for school enrollment, 2007-2010

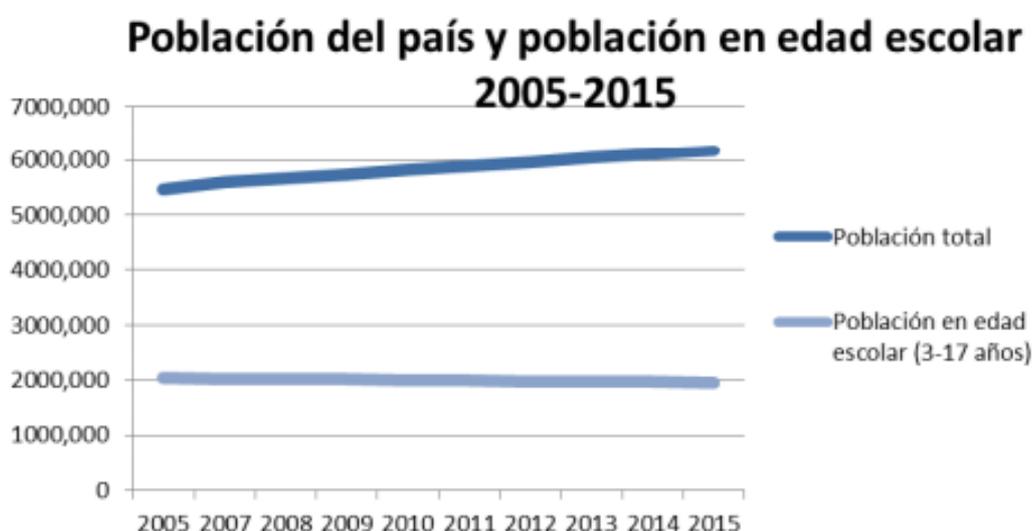


Source: MINED. Strategic Plan for Education 2011-2015.

This can be explained by three factors: First, the MINED has implemented different strategies to appeal to parents sending their children to school rather than making them work. The Ministry has pushed for programs with school meals (decreasing the cost of alimentation inside the house) and also providing school packages that include school utensils (partially reducing the direct costs of schooling).

Second, the entry of children that were previously excluded has also helped expand the enrollment rate. Children from rural areas and from lower economic levels are now being allured and incorporated to the school's system. Third, due to improvements in the country's health department, there has been a gradual population growth, accompanied with extended life expectancy and less mortality. This phenomenon has pushed people to grow older and young generations to shrink its size. As Figure 4 demonstrates and as MINED forecasted, the population that is within the ranges of school-age (between 3 and 17 years old) will see a gradual decrease from 2005 to 2015 for a 1.31% of the population(MINED, 2011, p. 9). This translated to a reduced schooling population easier to cover and to reach to.

Figure 5. Nicaragua's population and school-age population (2005-2015)



Source: MINED. Strategic Plan for Education 2011-2015.

In spite of such important advances Nicaragua still presents enrollment rates lower than the rest of Latin American countries. According to the IDB, for the Latin American general scenario, the average enrollment rate for primary education covers

above 90% (some countries such as Argentina, Chile and Uruguay have achieved almost a 98%), secondary education covers at least 80% and tertiary presents 30% of coverage (Banco Central de Nicaragua, 2007). All exceeding Nicaragua's numbers.

Another troubling issue is that schooling enrolling depending on level of poverty. As mentioned before, excluded groups have been actively pursued to close the socioeconomic educational gap. Nonetheless, results have been disappointing and require further analysis.

LSMS 2009 shows that socioeconomic backgrounds are crucial for the enrollment or non-enrollment of children. The results from the survey illustrate that as poverty level rises, so does the possibility of not attending school, leading to more children without education.

Table 2. School Enrollment Depending on Poverty Level

| Enrollment | Poverty Level 2009 |       |                |
|------------|--------------------|-------|----------------|
|            | Not Poor           | Poor  | Extremely Poor |
| Yes        | 96.1%              | 90.1% | 79.5%          |
| No         | 3.9%               | 9.9%  | 20.5%          |
| Total      | 100%               | 100%  | 100%           |

Source: Author's creation based on LSMS 2009

The probability of non-enrollment evidences the great gap between the extreme poor and the not poor, where 20.5% of the population answered that they would not enroll in school compared to the only 3.9% from the not poor people. It is also of great importance to understand the motivation behind this choice from the perspective of the extremely poor populations versus the not poor one. The IEEPP made a study inquiring on the reasons for not enrolling according to poverty level based on the LSMS 2009. They enlisted seven reasons and measured the answered to the different groups (Instituto de Estudios Estrategicos y Politicas Publicas, 2012, pp. 20-21). The reasons included, lack of money, distant school, family issues, chronic disease/disability, work on fields, not interested, others.

Table 3. Reasons to Not Enroll depending on Poverty Level

| Reasons                    | Poverty Level 2009 |       |                 | Total |
|----------------------------|--------------------|-------|-----------------|-------|
|                            | Not Poor%          | Poor% | Extremely Poor% |       |
| Lack of money              | 26.7               | 34.0  | 34.4            | 32.6  |
| Distant school             | 12.3               | 30.2  | 20.7            | 22.3  |
| Family issues              | 31.1               | 14.6  | 15.0            | 18.2  |
| Chronic disease/disability | 20.7               | 6.7   | 7.2             | 9.9   |
| Work on fields             | 2.0                | 5.3   | 6.1             | 5.0   |
| Not interested             | 4.9                | 2.9   | 5.2             | 4.4   |
| <b>Others</b>              | 2.3                | 6.3   | 11.4            | 7.6   |

Source: IEEPP. La Educacion Primaria en Nicaragua: Condiciones que favorecen u obstaculizan el aumento de la matricula, la retencion y la promocion escolar based on LSMS 2009

The LSMS 2009 reflects that the primary reason for not enrolling both the poor and extremely poor people is the lack of money and while the government has tried to promote school insertion through the provision of school meals and utensils package, there are other direct costs that the government does not cover such as transportation (linked to the second reason for not enrolling), cost of school uniform, shoes, books, plus other expenses. The LSMS 2009 shows that the average income for an extremely poor family is C\$ 6883.3<sup>5</sup> meaning that the annual income of an extremely poor family equals to roughly around 330 USD; for a poor family, the income is of C\$ 9658.8 (464 USD) and for a not poor family is C\$ 28,481.2 (1,364 USD). Based on this data, the IEPP made an estimate of how much a family spends per children annually.

Table 4. Annual Expenditure on Education depending on Poverty Level

| Annual Payments | Poverty Level 2009 |       |                | Average |
|-----------------|--------------------|-------|----------------|---------|
|                 | Not Poor           | Poor  | Extremely Poor |         |
| Córdobas        | 3,040.9            | 358.2 | 144.4          | 1948.6  |
| Dollars         | 149.5              | 17.6  | 7.1            | 96      |

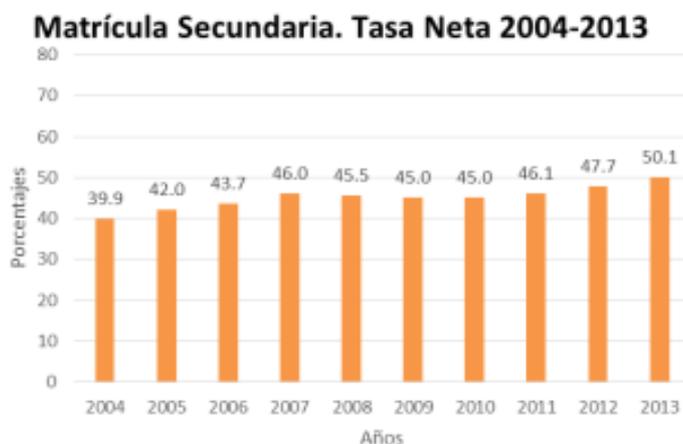
Source: IEEPP. La Educacion Primaria en Nicaragua: Condiciones que favorecen u obstaculizan el aumento de la matricula, la retencion y la promocion escolar based on LSMS 2009

<sup>5</sup> 1 US Dollar = 20.83 Nicaraguan CordabaOros on 12/18/2009

These results show that it only those who are located in the Not Poor segment would be able to afford an average national annual education expense. This under the assumption that the family holds only one child but the LSMS 2009 also shows that the poorer the household, the bigger it is, in which there is the possibility that there could be more than one child. This is a variable that must be address because it leads not only the failure of school enrollment but also it has repercussions over the completion rate and desertion rate, which will be discussed on later on the analysis.

Moreover, another disconcerting problem lies in the enrollment rate for secondary education. School enrollment should not only focus on primary education but on pre-school and secondary school as well because they both hold foundations to better human capital. In this sense, Acevedo explains: *“The net secondary school enrolment rate in Nicaragua stands only at 41% - this rate implies that 6 out of 10 young people of secondary school age remain out of the education system – and is similar to that registered in Mozambique – an African country with a per capita income 40% lower than that of Nicaragua –, while the net secondary school enrolment rate in Bolivia reaches 71%.”* (Acevedo Vogl, p. 10).

Figure 6. Net rate for Secondary Education 2004-2013



Source:(Foro Educativo Nicaragüense EDUQUEMOS , 2014, p. 9)

Whilst the enrollment rate has been rising, it is still under low levels compared to the rest of Latin America. It must be considered that this is merely the count of enrollment, it does not transfer for actual completion of secondary education, which will be discussed in the next section. The World Bank (World Bank, 2008) studied the net enrollment rates for all education levels and found that for the capital –Managua– enrollment rates both in pre-school and secondary school doubled those from rural regions such as the Atlantic and Central Regions. These areas are mostly covered with poor and extremely poor population, and while, primary education’s enrollment is flat across regions, the other two vary by a deplorable number creating a wide gap between education possibilities.

Table 5. Enrollment rates in the Atlantic Region fall behind nationally, especially for preschool and secondary school.

|                  | % Children 4 to 6<br>enrolled in<br>CICO/CDI | Preschool Net<br>Enrollment Rates<br>in % | Primary Net<br>Enrollment Rates<br>in % | Secondary Net<br>Enrollment Rates<br>in % |
|------------------|--|---|---|---|
| <b>By Strata</b> |  |   |   |   |
| Rural            | 3.6  | 32.9                                      | 84.0                                    | 28.1                                      |
| Urban            | 2.5  | 42.7                                      | 84.3                                    | 61.1                                      |
| <b>By Region</b> |  |   |   |   |
| Managua          | 3.4  | 48.1                                      | 82.9                                    | 66.2                                      |
| Pacific          | 0.6  | 40.2                                      | 86.1                                    | 51.0                                      |
| Central          | 4.6  | 34.7                                      | 84.9                                    | 35.9                                      |
| Atlantic         | 3.2  | 28.7                                      | 80.8                                    | 27.0                                      |

Source: World Bank (2008). Nicaragua’s Poverty Assessment based on LSMS 2005  
Given these issues, it is important to continue on analysis the other indicators to have a holistic comprehension of the consequences that focusing on merely rate numbers produce.

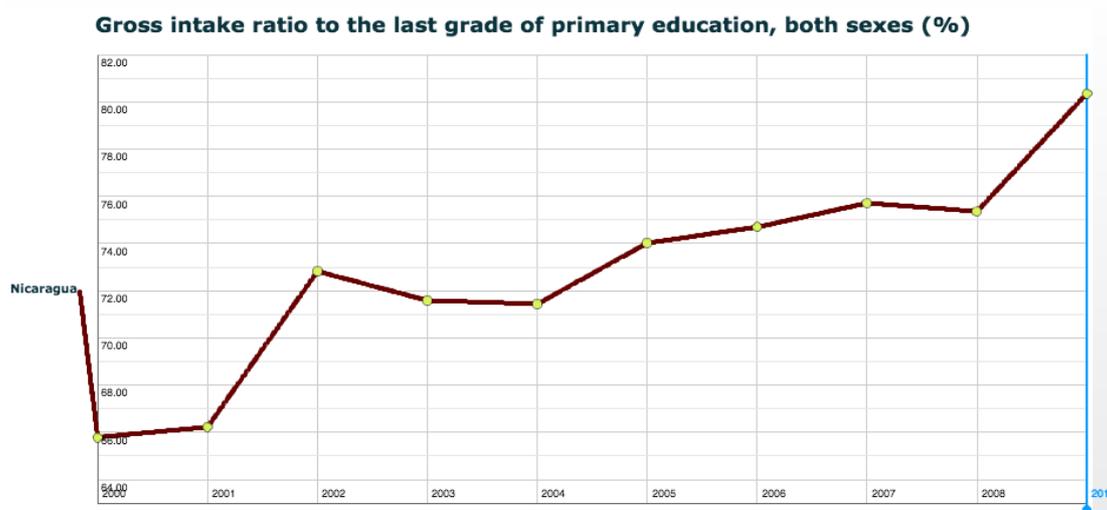
#### 4.1.2 Completion Rate

The second indicator of the MDG 2 revolves around completion rate for primary school.

The goal strives for all children to complete a full course of primary school by 2015.

According to data from UNESCO’s database, the completion rate for primary school spiked to an 80.36% by 2010, gradually rising throughout the years.

Figure 7. Percentage of Completion rate of Primary Education for Nicaragua

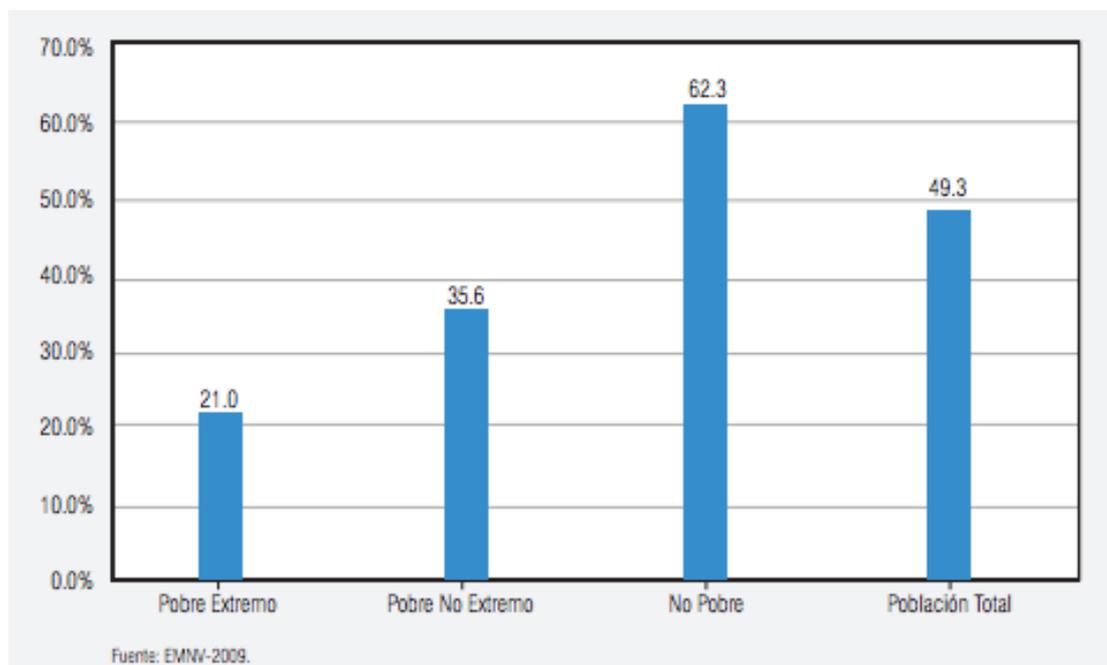


Source: Author's creation with UNESCO data

At first glance, based on purposes for MDG achievement, the increase in completion rate seems to be successful. However, upon further examination, this number needs additional evaluation.

First, Nicaragua presented a program called “Batalla por el sexto grado”, which translates to “Battle for the Sixth Grade”. It is an historical challenge oriented to the completion of primary education (Instituto de Estudios Estrategicos y Politicas Publicas, 2012, p. 9). The main problem is what it is known as ‘shelling of school enrollment’ and it consists on the loss that school enrollment faces during primary school throughout the years for students that start their studies but fail to complete school in the estimated time. As Figure 7 presents, according to the LSMS 2009, a total of 49.3% of the students manage to complete primary school. The alarming data is that out of that total of 49.3%, 62.3% population that finishes primary school belongs to the Not Poor segment, meaning that from the division of extreme poverty only 21% of children manage to finish primary school. This evidences a huge inequality gap in education completion.

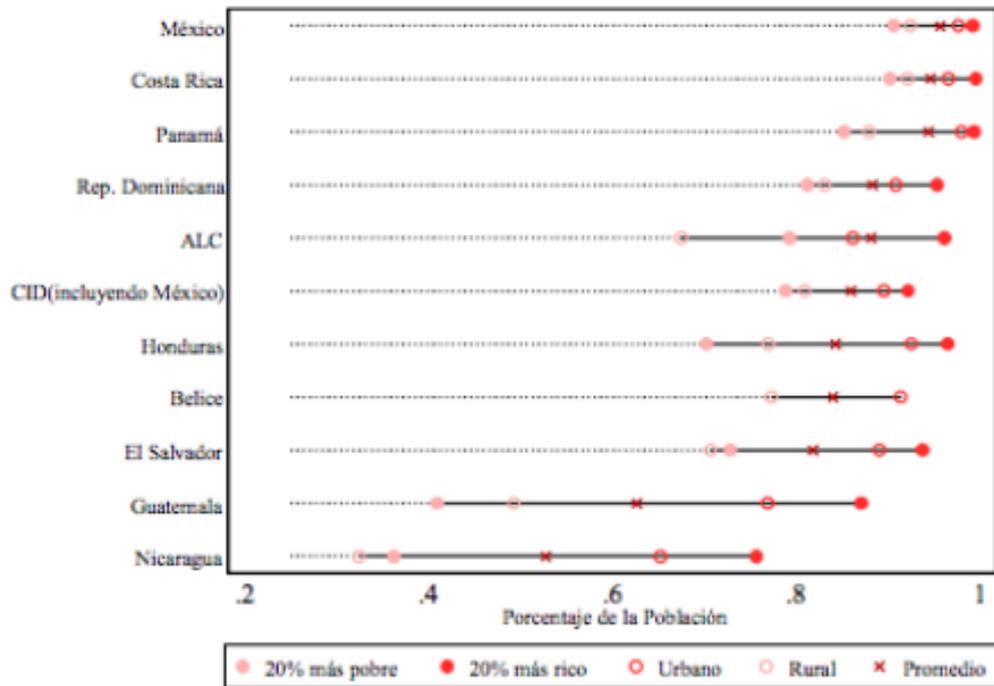
Figure 8. Percentage of Completion rate of Primary Education for Nicaragua per Poverty Level



Source: (Instituto de Estudios Estrategicos y Politicas Publicas, 2012)

According to the IDB, in Latin America, nine out of ten children complete primary education (Näslund-Hadley, Meza, Arcia, Rápalo, & Rondon, 2012); in Nicaragua, only five out of ten do, making the country have the lowest rate of completion within the region.

Figure 9. Completion Rate for Primary school. Ages 15 to 19



Source: (Näslund-Hadley , Meza, Arcia, Rápalo , & Rondon, 2012, p. 10)

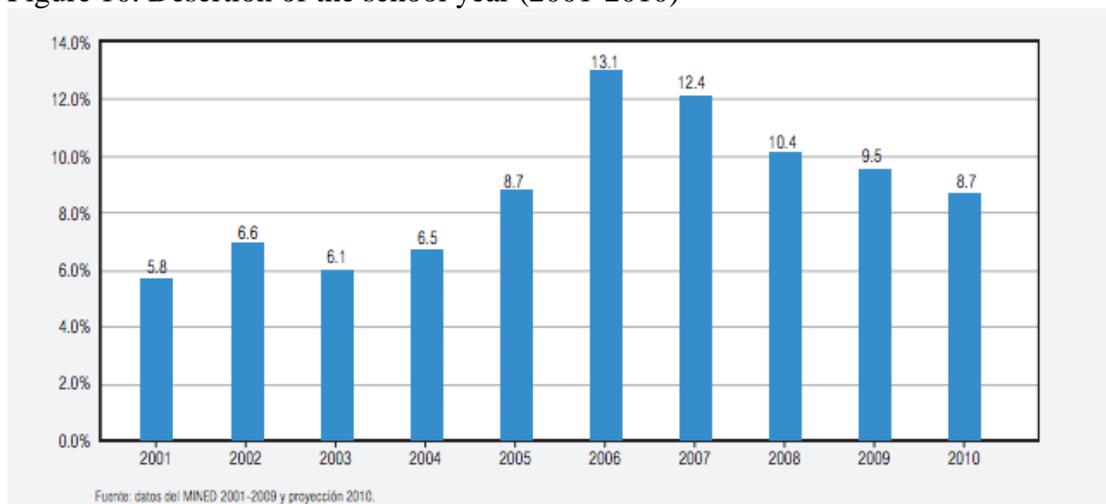
According to this figure provided by the IDB and its report, in Nicaragua only three out of ten children belonging to the poorest quintile complete primary education; in the richest quintile, however, eight out of ten reach this level. Nonetheless, completion rates are low even for the richest young people of the Nicaraguan population, particularly when compared to Latin America, where one hundred percent of youth in the highest wealth quintile have basic primary education.

Failure in completion rate for primary school is represented by two causal problems: desertion of the school year and school abandonment (dropping out of school). The first conveys to a temporary absence and gradual reincorporation to school by next year; the second one means a dropping out of school indefinitely and with no plan of return.

In terms of desertion of the school year, as Figure 10 shows, the beginning of the millennium showed a small percentage of school desertion in comparison to the

steep rise given in 2006-2007, which can be explain by the non financing of the ‘Social Protection Net’ which was a program that covered education expenses for families below the poverty line that included a school bonus and school backpack.(Bastagli, 2009) However, it is important to note the since then, it has been constantly declining.

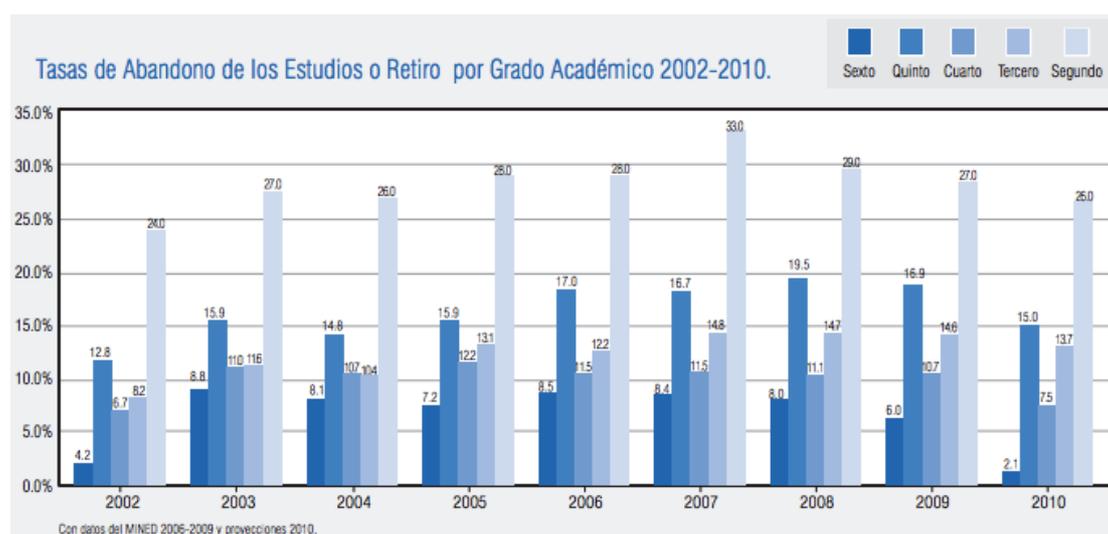
Figure 10. Desertion of the school year (2001-2010)



Source: (Instituto de Estudios Estrategicos y Politicas Publicas, 2012)

As presented in the Figure below, desertion of the school year by educational level shows that the grades that receive more ‘shelling’ are second and fifth grade. By 2010, second grade had a 25% drop out rate while fifth grade had a 15% one. The transition between grades seems to be highly sensitive in the first grade –which holds high educational expectations- and the fourth grade –which starts the transition to harder subjects regarding Math and Sciences-.

Figure 11. Desertion of the school year Academic Level 2002-2010



Source: Source: (Instituto de Estudios Estrategicos y Politicas Publicas, 2012)

Regarding school abandonment, the LSMS 2009 does not inquire in detail the reasons to why children drop out of school, but it does show that 17.7% of them decide to definitely drop out of school and amongst the poor quintile, this percentage escalates to 25.9%. According to IEEPP, the main reason to retire from school falls into “do not want to continue/ does not like school”.

Table 6. Reasons for not attending to class. Group between 7 and 23 years old.

**Cuadro 23. ¿Por qué no asiste actualmente a clase? Grupo de 7 a 23 años**

| <b>Razones</b>              | <b>Porcentajes</b> |
|-----------------------------|--------------------|
| Notiene interés             | 30.7               |
| Trabajo/labores en el campo | 21.7               |
| Falta de dinero             | 20.3               |
| Escuela lejos               | 6.2                |
| Cuido de niños              | 5.0                |
| Problemas familiares        | 4.9                |
| Enfermedad                  | 4.7                |
| Labores domésticas          | 2.8                |
| Otros                       | 3.7                |

Fuente: ENVI 2009.

Source: (Instituto de Estudios Estrategicos y Politicas Publicas, 2012)

Out of the population interviewed for the LSMS 2009, 30.7% of the children dropped out of school because they did not want to be involved at school. This result is troublesome since it shows that the lack of motivation or lack of interest in school is a strong decisive factor not for enrollment but for completion of school. It is important to understand why these children feel demotivated to continue their studies because this answer might evidence the low relevance in the

quality of educational supply being offer which might be a factor contributing to the lack of incentive among children and young people. The second reason that weights on the decision to quit school is because of work/labor at fields with a 21.7% and the third one corresponds to the lack of money with a 20.3%. From these three main reasons, it

is possible to conclude that the lack of interest in school, added to the lack of money, push the population into the labor market, which satisfies their immediate need for money. Child labor becomes a solution for abandoning school and once children enter the labor force, it is very hard to reintegrate them into the school atmosphere due to the opportunity cost between spending their time studying and spending their time working. A study made by INTERVIDA regarding child labor concluded that 30% of the interviewed children answered that “it is appropriate to drop out of school in order to work if the family is poor”, to which there was a stronger response by children from the 1<sup>st</sup> and 4<sup>th</sup> grades<sup>6</sup>(INTERVIDA, 2009, p. 33). Most of these children end up working for activities involved in the primary sector (Annex 1) which activities involve agriculture or fishing with low wage returns, or doing staying at home domestic work.

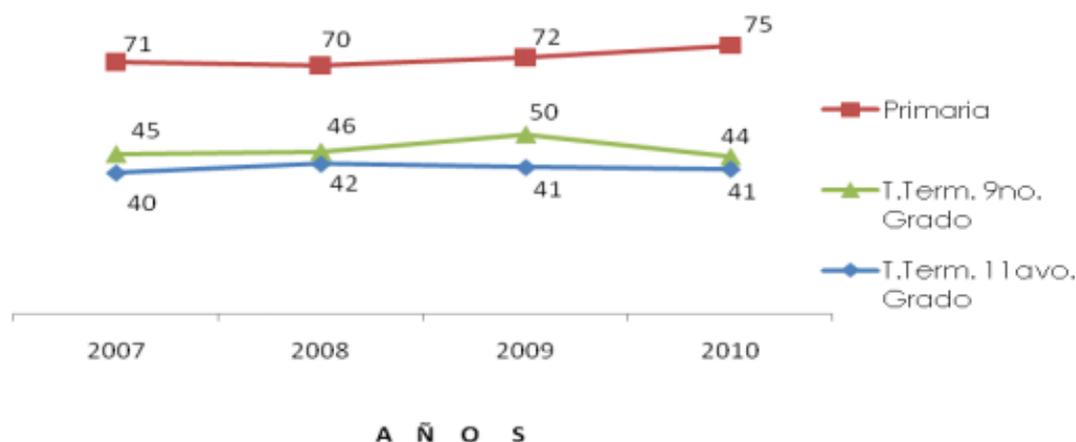
For secondary education, the direction does not seem to improve, rather, completion rate for secondary education is even harder to achieve. Secondary Education is commonly divided between I Cycle and II Cycle. I Cycle include seventh, eighth and ninth grades and II Cycle includes tenth and eleventh grades. In Central America by completing I Cycle an adolescent is legally able to get a part time job since by the end of the cycle, he or she would have turned 15 years old. Many relatively low paying jobs request only the completion of I Cycle of Secondary Education as a job requirement, which is an explicit motive to not finishing the two terms of high school since having the first one is enough to find a job. Considering this, as the Figure 12 illustrates, by 2010 completion rate of I Cycle of high school reached 44% while II Cycle only obtained 41% of completion rate. This means that out of 100 young adults

---

<sup>6</sup> This can be linked to the rise in desertion in grades 2<sup>nd</sup> and 5<sup>th</sup> previously explained in the school enrollment subsection.

and adolescents, only an average of 40 of them will finish secondary education in its totality.

Figure 12. Completion Rate per Educational Level 2007-2010

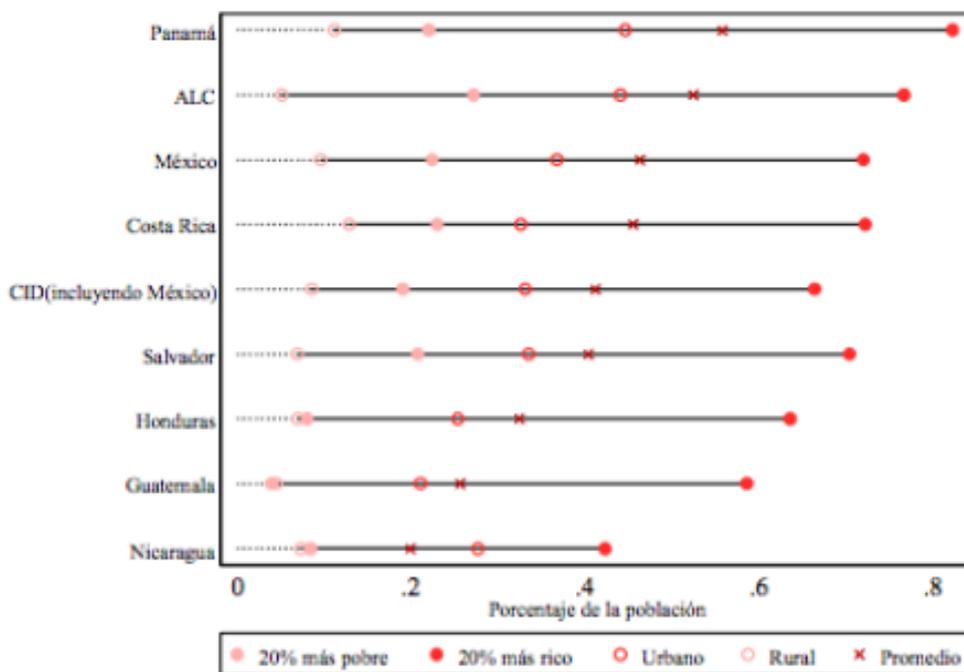


Source: (MINED, 2011, p. 24)

The pattern of completion rate shows that it has been constant in staying below the fifty percentage of total completion. Compared to the completion rates on primary education, there is a big gap and it leads to believe that there is not enough incentive that pushes adolescents and young adults to continue their secondary studies. It also shows that the goal to achieve a high completion rate for secondary education is not being aggressively pursued as the completion for primary education. In comparison to the rests of the Latin American countries, Nicaragua has the lowest completion rate of secondary education in the entire region for both secondary educations' cycles (see Annex 2).

Figure 13. Completion of Secondary Education Latin America. Young adults between 20 and 24 years old.

**Tasas de culminación de secundaria. Jóvenes de 20 a 24 años.**



Fuente: BID/EDU, Encuesta de Hogares 2009.

Source: (Näslund-Hadley , Meza, Arcia, Rápalo , & Rondon, 2012, p. 11)

#### 4.1.3 Literacy Rate

In 2008, Laguna and Angel-Urdinola worried that “*in extremely poor households in Nicaragua, one out of four young people between the ages of 15 and 24 years is illiterate (...) it is alarming that while 99% of young people from the richest quintile can read and write, only 78% from the poorest quintile can do so.*” (See Annex 3) However, from 1998 to 2005 there was a raise of literacy of 8 points (Angel-Urdinola & Laguna , 2008, p. 8) and since then, there have been several new programs directed to improve illiteracy among the general population. The Nicaraguan government has pushed numerous initiatives and strategies to reduce illiteracy among young adults (ages 15-24, those who abandoned school but need basic knowledge for activities),

adults (15+years) and elderly (65+years). UNESCO estimates to achieve a 92% literacy rate for young adults out of a population of 107,848; out of 732,070 illiterate adults, UNESCO estimates show a literacy coverage of 82.82% by 2015.

Table 7 Literacy Rates. 2001-2005

|  | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|--|------|------|------|------|------|------|
| Literacy rate, youth total (% of people ages 15-24)        | 86.2 | ..   | ..   | ..   | 87.0 |      |
| Literacy rate, adult total (% of people ages 15 and above) | 76.7 | ..   | ..   | ..   | 78.0 |      |

Source. World Development Indicators

#### 4.2. How educated is Nicaraguan labor?: Quality of education

One crucial aspect to consider for education is the quality of it. It is unproductive to attain numerous years of school and invest time, money and effort in education if the results are insignificant. The end of education is to learn and obtain knowledge that will be engraved in our minds through the productive labor years and the rest of life. In his study, Pritchett explains that in the equation of economic growth and educational attainment, school quality is important because *“schooling quality may be so low that it does not raise cognitive skills or productivity”*. (Pritchett, 2000, p. 4)

However, to determine whether if a school is providing a good quality education or not is a difficult task since education is a complex activity with a long duration. There are many factors that influence the quality of the educational system. Additionally, there is still a debate over the definition of educational quality and the standards to measure it. Nonetheless, UNESCO has provided a definition for good education quality: *“quality education is one that facilitates the acquisition of knowledge, skills and attitudes that contribute to achieving important human goals.”*

Pritchett also mentioned *“the quality of schooling across countries is impossible to measure without internationally comparable test examinations of comparable groups of students”*(Pritchett, 2000, p. 15). A recent study by the World Bank revealed that an increase in performance on standardized tests is associated with higher economic growth in the medium and long term. This study analyzes data from 50 countries over a period of over 40 years and concludes that one standard deviation increase in the average score of students in a country on a standardized test, helps to increase by about 2% GDP per capita. The authors also noted that this impact is stronger in developing countries(Hanushek & Woessmann, *The Role of Education Quality in Economic Growth*, 2007).

In 2002, with an examination implemented by the MECD<sup>7</sup>, the World Bank found that *“less than 14 percent of all students in 3<sup>rd</sup> and 6<sup>th</sup> were found to be proficient in their curriculum (...) between 60 and 90 percent of all the students in 3<sup>rd</sup> and 6<sup>th</sup> grade have only a basic (or below then expected) knowledge about the curriculum (mathematics and Spanish). Only a minority (10 to 25 percent) of the student population was found to have a normal or proficient knowledge on their curriculum.”*<sup>8</sup> (World Bank, 2008, p. 47) (See Annex 4)

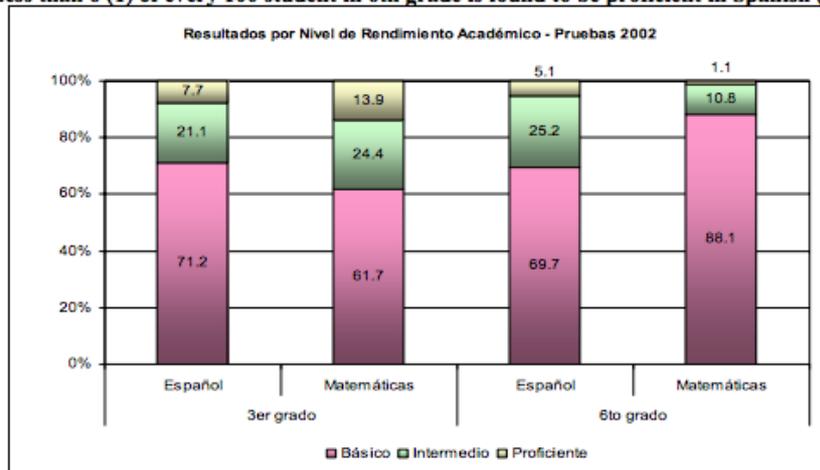
---

<sup>7</sup> Ministry of Education, Culture and Sports of Nicaragua

<sup>8</sup> Results taken from MECD’s Division on the Evaluation of Policies, Programs and Projects 2002.

Figure 14. Academic Performance Results

Figure 39: Less than 6 (1) of every 100 student in 6th grade is found to be proficient in Spanish (mathematics)



Source: Tests of Academic Performance (MECD 2002)

Source: (Angel-Urdinola & Laguna , 2008)

Moreover, for the Latin American region, the SERCE is the mechanism in charge of analyzing the education quality across Latin American countries<sup>9</sup>. In 2006, results from the SERCE showed that Nicaragua was located as one of the countries with lowest educational average and it also ranked with the worst test results of learning assessment. Results from SERCE 2006 showed that most of the students from 3<sup>rd</sup> and 6<sup>th</sup> grade in primary school had basic or restricted knowledge of the basic contents from the academic exams. Mathematic was the most difficult subject for the students. (Laguna & Porta, 2008). Furthermore, performance also varied across groups of students were thos from rural areas attending public shools seemed to perform worse than the rest.

<sup>9</sup>SERCE (Second Regional Comparative and Explanatory Study) is a part of the all-encompassing actions taken by the UNESCO Regional Bureau of Education for Latin America and the Caribbean (OREALC/UNESCO Santiago) to ensure everyone's right to a quality education that is relevant, pertinent and equitable.

Table 8. Scores from general examination on the subject of Mathematics.

**Puntaje en matemáticas, tercer grado. Serce, 2006.**

|               |     |   |
|---------------|-----|---|
| Cuba          | 648 | El puntaje promedio de estos países es <b>significativamente superior</b> al promedio regional            |
| Nuevo León    | 563 |   |
| Uruguay       | 539 |   |
| Costa Rica    | 538 |   |
| México        | 532 |   |
| Chile         | 529 |   |
| Argentina     | 505 | No hay diferencias <b>significativas</b> entre el puntaje promedio de estos países y el promedio regional |
| Brasil        | 505 |   |
| Colombia      | 499 |   |
| Paraguay      | 486 | El puntaje promedio de estos países es <b>significativamente inferior</b> al promedio regional            |
| El Salvador   | 483 |   |
| Perú          | 474 |   |
| Ecuador       | 473 |   |
| Nicaragua     | 473 |   |
| Panamá        | 463 |   |
| Guatemala     | 457 |   |
| R. Dominicana | 396 |   |

Fuente: Serce, 2006.

Source: (Näslund-Hadley , Meza, Arcia, Rápalo , & Rondon, 2012)

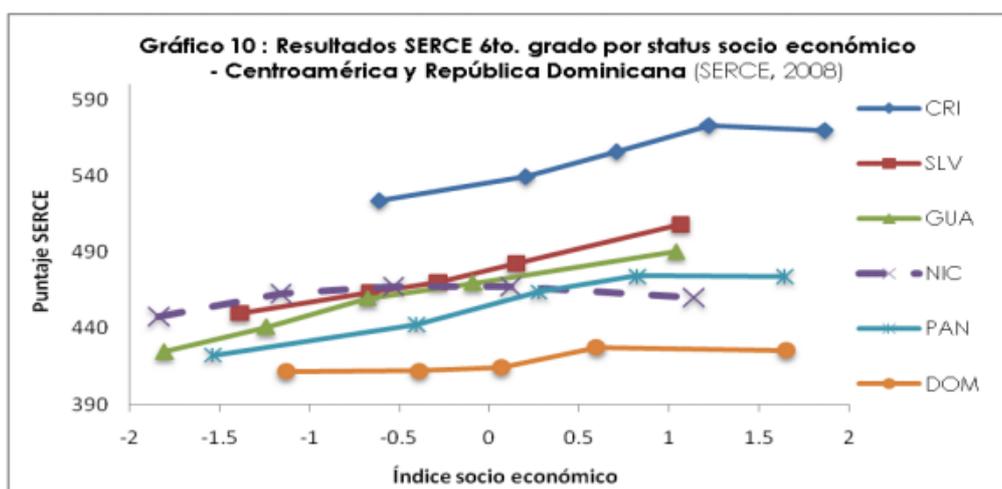
Overall, Nicaragua ranked with a score below the regional average. The catastrophic results mobilize the country to reflect on their then-current policies and to think about how to deal with these challenges in order to reverse this negative path. As a result, the government changed strategies and started focusing on improving the quality that its educational curriculum was offering the students.

According to the MINED, the 2007 school curriculum presented a strong disarticulation between different educational levels. It was oriented with an emphasis that did not have practical applications, with no experimental work and that exploited the reproduction of knowledge by memory rather than comprehension. It also lacked participative focus and it did not build capabilities or skills that would develop logical and reflexive thoughts.(Programa Estado de la Nación, 2014) Based on the low scores showed on the SERCE examinations and the weak educational curriculum, the National

Commission of Curriculum decided to restructure and renovate the curriculum to a more holistic one that would engage other significant areas for students such as vocational orientation and promote a practical approach.

The results from SERCE 2008 showed a visible improvement in which Nicaragua moved up the latter among its Central American neighbors, locating itself in the middle of them this time; while it is still in the bottom part, it should be noted that the scores showed advancement in the results in a gap of only two years.

Figure 15. Results from SERCE examination.



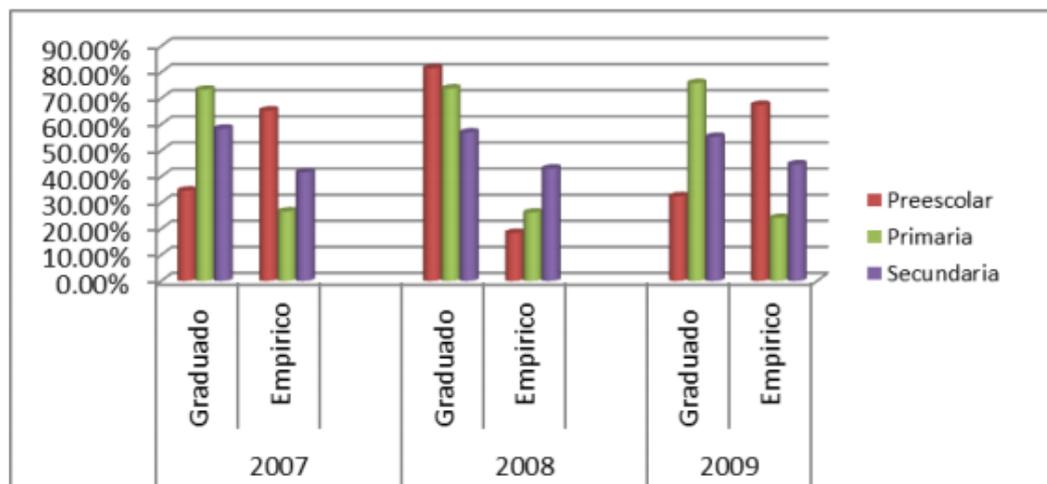
Fuente: SERCE (2008).

Source:(MINED, 2011, p. 33)

Another factor that affects the quality of education can be found in teachers. Teachers are the people who share knowledge and how they manage to teach is primordial for the fundamental understanding of students. However, the current condition in which teachers work faces numerous challenges and must be address because they imply a change in the quality of education. First, Nicaragua’s teacher work force is less qualified than expected. According to Vijil: *“Along with the limited salary and lack of incentives for teachers, there’s also the challenge of how to train them. All Nicaraguan governments have invested more in on-the-job teacher training, in other*

words training them after they've started working. Up to now little importance has been given to their initial training, which is fundamental to their professional formation, so they can go to teacher training school and learn a methodology they can then put into practice to teach their pupils. There's also no pedagogical accompaniment for teachers; what they get instead is supervision.”(Vijil, 2008). Nicaragua has a big phenomenon of what it is known as “empiricos” or untrained/uncertified teachers. The “empiricos” usually lack the necessary training or cognitive capacity building needed to ensure a high quality education. Figure 16 shows that between 2007 and 2009, the level of “empiricos” reached a 40 percent in general. For 2009, there was a high level of empiricos for both pre-school and high school. For the case of primary education, more graduated teachers are available for market supply.

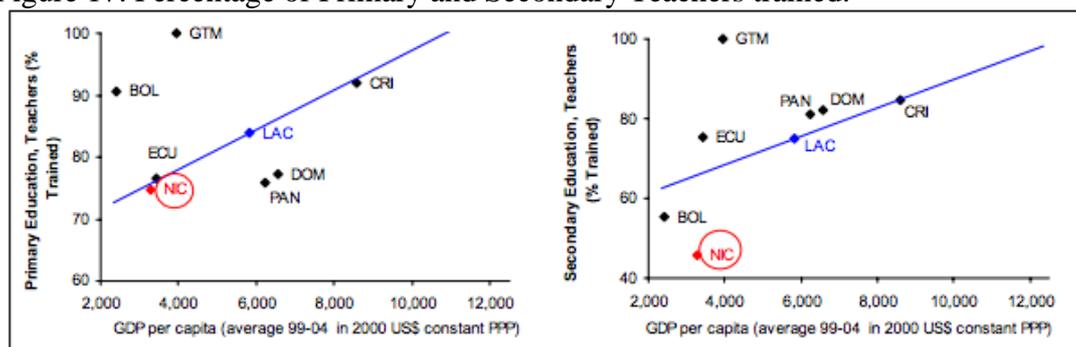
Figure 16. Teacher Qualifications per Educational Level



(MINED, 2011)

According to the Poverty Assessment, Nicaragua had the lowest share of trained teachers in Latin America, especially in secondary education. 25 out of 100 teachers were not well equipped for primary education and for secondary education, the number was superior to 50 percent.

Figure 17. Percentage of Primary and Secondary Teachers trained.



Source: International Education Statistics (2007). Data on teachers trained displays the 1999-2004 average.

Source: (World Bank, 2008, p. 46)

More recent data from UNESCO indicates that by 2010, out of 30,571 available teachers, 75 percent are trained. However, for secondary education, from a pool of 15,059 teachers, only 53 percent are qualified to be teachers; the rest belongs to the empiricos category. The problem with untrained teachers is the potential drag on the quality of education that might have scarring consequences –mainly in the enrollment/completion rates- for the student population. Teachers lack the tools, knowledge, skills and training needed to promote quality learning and while Nicaraguan the law requires that preschool and primary education teachers obtain a degree from a normal teacher school, and one degree of top level in science to practice in high school, the level of empiricism in 2010 rose to 21,515 uncertified teachers in all three levels of education combined, which represents 38% of the teacher working force.

Second, the next challenge that teachers face are low salaries. Low salaries are a highly demotivating variable that shoves teachers to take extra measures in order to secure a decent income; teachers either take extra turns at school or have side jobs that will generate enough additional income to get by. According to the Ministry of Education, Culture and Sports (MECD), by 2004 the average income for a primary education teacher was of \$111 USD and for a high school teacher was \$117, which represents only an average of 66% of the basic basket. (Ministerio de Educacion,

Cultura y Deportes, 2004) Taking additional measures to have more income is detrimental to the performance of the teacher since she/he lacks the time to prepare the class and properly tackle daily tasks. By 2006, only 16 percent of the teachers were satisfied with their payment. Since 2007, the Government for Reconciliation and National Unity has gradually increased the salary of teachers to reduce the gap between wage and cost of the basic food basket. Table 9 explains the increments of wages from 2007 until 2009. In a two years' term, the salaries for primary school teachers has increased by a 32.4% and more importantly, considering the lack of teachers for high school education, salaries for secondary education has risen a 44% to help motivate teachers to transition to the secondary education sector.

Table 9. Wages per educational level, 2007-2009 (nominal and real)

| Modalidad                | 2007  | 2008  | 2009  | Incremento salarial |
|--------------------------|-------|-------|-------|---------------------|
|                          |       |       |       | 2007-2009           |
| <b>Cifras nominales</b>  |       |       |       |                     |
| Educación Preescolar     | 3.071 | 3.594 | 4.094 | 33.3%               |
| Educación Primaria       | 3.119 | 3.629 | 4.129 | 32.4%               |
| Educación Secundaria     | 3.220 | 4.135 | 4.635 | 44.0%               |
| <b>En moneda de 2009</b> |       |       |       |                     |
| Educación Preescolar     | 3.526 | 3.627 | 4.094 | 16.1%               |
| Educación Primaria       | 3.581 | 3.661 | 4.129 | 15.3%               |
| Educación Secundaria     | 3.697 | 4.172 | 4.635 | 25.4%               |

*Fuentes: División de Recursos Humanos, MINED y Banco Central de Nicaragua (2011).*

Source:(MINED, 2011)

Third, Nicaragua is the Latin American country with the highest pupil-teacher ratio in the region, both in primary and secondary schools. The assumption is that the

smaller the class, the better quality the education will be because the teacher can focus on a certain quantity of students. However, in the case of Nicaragua, the ratio pupil/teacher seems to be high by one teacher supplying the educational demand of an average of 35 students; the average for the rest of the Latin American countries is a class composed of maximum 27 students(World Bank, 2008, p. 46). Data from recent years indicates that the ratio has not presented major changes since 2000. It still ranges around the average of 30 students per teacher.

Table 10. Pupil/Teacher ratio in Primary and Secondary Education (2000-2010)

| Time | Pupil-teacher ratio in primary education | Pupil-teacher ratio in secondary education |
|------|--|--|
| 2000 | 35.66299                                 | 31.99942                                   |
| 2001 | 36.71573                                 | 33.30734                                   |
| 2002 | 35.20899                                 | 33.88947                                   |
| 2003 | 34.47031                                 | ..   |
| 2004 | 35.01829                                 | 32.42272                                   |
| 2005 | 33.55782                                 | 33.7329                                    |
| 2006 | 33.2727                                  | 32.82258                                   |
| 2007 | 30.55547                                 | 31.1067                                    |
| 2008 | 29.19228                                 | 28.59428                                   |
| 2009 | ..                                       | ..   |
| 2010 | 30.21638                                 | 30.83047                                   |

Source: Author's construction from UNESCO database

To ensure quality in education there must be quality of school's ambiance as well. There is a strong positive and significant correlation between quality of infrastructure and access to basic services with the learning of students(Duarte, Garguilo, & Moreno, 2011). As of 2009, Nicaragua counts with 29,857 classrooms, from which 48% are in good state, 33% are in regular and 19% are in bad condition but most of them are fixable. Many of the schools also lack of proper infrastructure and 61% still do not have access to water and bathrooms(Ministerio de Educacion, Cultura y Deportes, 2004). Moreover, there is a deficit of school furniture; for pre-school there

is a shortage of 7,251 sets of 1 table and 6 chairs and for Primary and Secondary Education, schools are lacking 86,839 desks in its totality. (MINED, 2011)

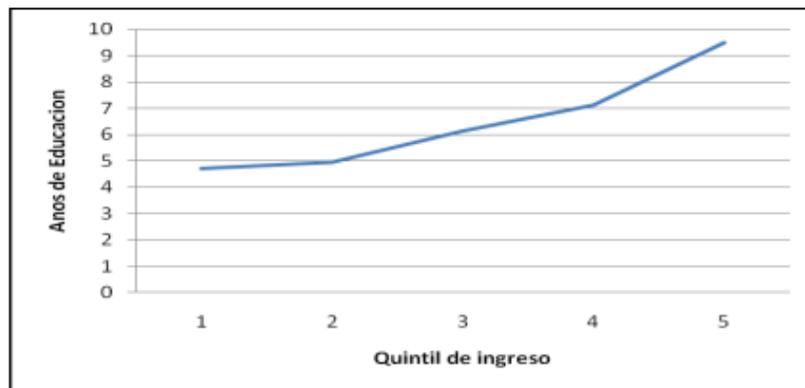
The classroom and the overall school environment are crucial aspects needed for significant changes to occur. It is impossible to have an attractive and motivating school life for students and teachers without having the basic services and furniture to engage into an active school routine.

#### **4.3. Does Education Pay in Nicaragua?**

It is widely accepted that higher levels of education lead to higher wages, which consequently produces more productivity and increases the output per worker, therefore boosting economic growth. According to the MINED, for Nicaragua there is a positive relationship between educational attainment and income that people earn during adulthood. The average education of the highest income quintile of the population age 15-64 years old is 9.5 years of education, compared with five years in the lowest quintile (Figure 13)

Figure 18. Income Quintile and years of schooling per socioeconomic quintile.

**Gráfico 9. Años de Educación promedio por quintil socioeconómico (Población 15-64 años)**

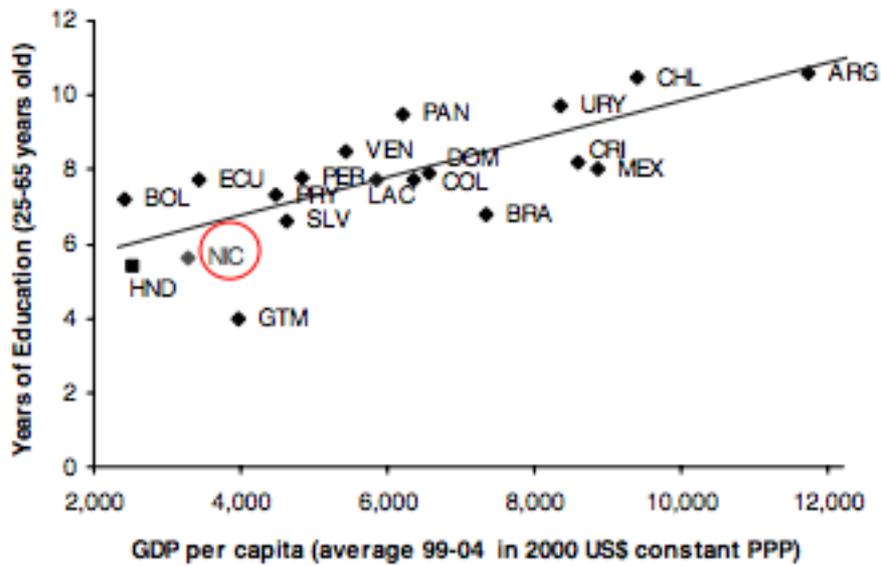


*Fuente: División de Estadística. MINED*

Source: (MINED, 2011)

This outcome has two implications: 1) that there is a link between the work incentives and motivation for education (MINED, 2011) and 2) As the correlation between education and wage seems to be positive, it can be implied that higher education leads to an economic growth and could potentially lead to a decrease in poverty. However, as the World Bank points out in a study for Central America, (Banco Mundial, 2012b) Nicaragua is one of the countries with lower education average.

Figure 19. Mean Years of Education in Nicaragua vs LAC (1994-2004)



Source: International Education Statistics (2007)

Source: (World Bank, 2008)

Figure 6 shows that there is a positive correlation between a country's growth in term of GDP per capita and their educational level. In the case of Nicaragua, it is visible that it is located among the poorest countries in Latin America with an adult population possessing low years of education along with Bolivia and Honduras. On the contrary, Argentina and Chile rank highest followed by Mexico, Costa Rica and Uruguay. Few years of education indicates that the educational attainment is rather low in Nicaragua. Table 11 shows the average years of education based on residential area and age.

Table 11. Average years of education based on residential area and age (15-64y/o)

| <b>Grupo edad</b> | <b>Urbano</b> | <b>Rural</b> |
|-------------------|---------------|--------------|
| <b>15-19 años</b> | 7.80          | 5.61         |
| <b>20-24 años</b> | 9.52          | 6.01         |
| <b>25-29 años</b> | 9.28          | 5.10         |
| <b>30-34 años</b> | 8.34          | 3.98         |
| <b>35-39 años</b> | 8.09          | 4.04         |
| <b>40-44 años</b> | 8.40          | 3.76         |
| <b>45-49 años</b> | 7.62          | 3.23         |
| <b>50-54 años</b> | 7.33          | 2.20         |
| <b>55-59 años</b> | 5.98          | 2.02         |
| <b>60-64 años</b> | 4.80          | 1.40         |
| <b>Total</b>      | <b>8.16</b>   | <b>4.48</b>  |

*Fuente: EMNV, 2005.*

Source: (MINED, 2011)

Table 11 presents various patterns: 1) There is a significant gap between years of schooling attained between the urban and the rural area. It is visible that population from rural areas still suffers from low schooling. 2) The overall pattern has been improving. An adult age 60-64 from the rural area only has an average of 1.40 years of schooling (no even finishing primary education); in contrast, young adults age 15-19 and 20-24 in the rural area, will have an average of 5 to 6 years of schooling, meaning

that they will have at least completed primary education. 3) These average years of education are still on the lower desirable panorama.

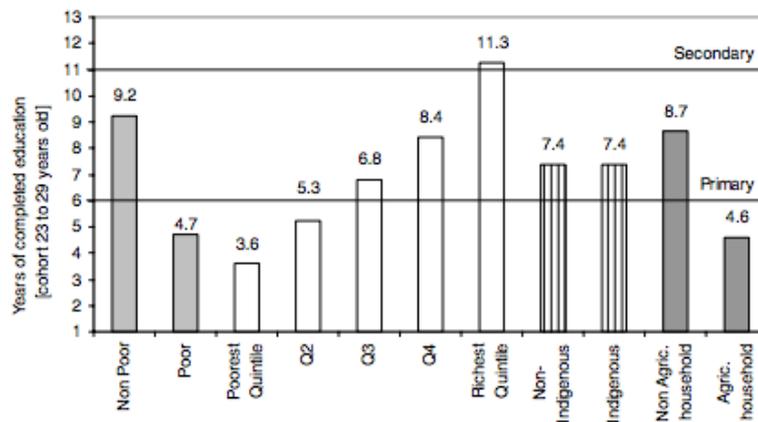
The average years of education of the young adult population of Nicaragua are below the average for Latin America. While adults between 40 and 45 years in Latin America have 8.7 years of education on average, in Nicaragua, this group reached only 6.9 years of education. In Latin America, the group of young people born between 1985 and 1990, has ten years of education on average; in Nicaragua, however, this group reaches eight years of education. Despite this gap, an improvement on the years of education among the poorest is observed. A person born in 1960 in the poorest quintile of the population or in a rural area, only reached an average of three years; however, a person born in 1990 reaches six. While this is an important breakthrough, young people in the most vulnerable groups in society only complete primary.

Furthermore, taking a close look at this table, young individuals between 20 and 24 years old have an average of 9.52 years of schooling –complete primary school and possibly complete lower secondary education- but to young adults in the same age range but who live in poor rural areas the situation changes drastically. Young individuals who are poor and especially those living in households engaged in agriculture attain less than 6 years of education on average since their average years of school figures only 6.01 –presumably complete primary education<sup>10</sup>- . The question is: who obtains 11 years of education?

---

<sup>10</sup> This under the assumption that they 1) completed primary education, 2) did not repeat any year, 3) did not desert a school year.

Figure 20. Years of complete education (cohort 23 to 29 years old) and Income Level



Source: World Bank using the 2005 Nicaragua EMNV

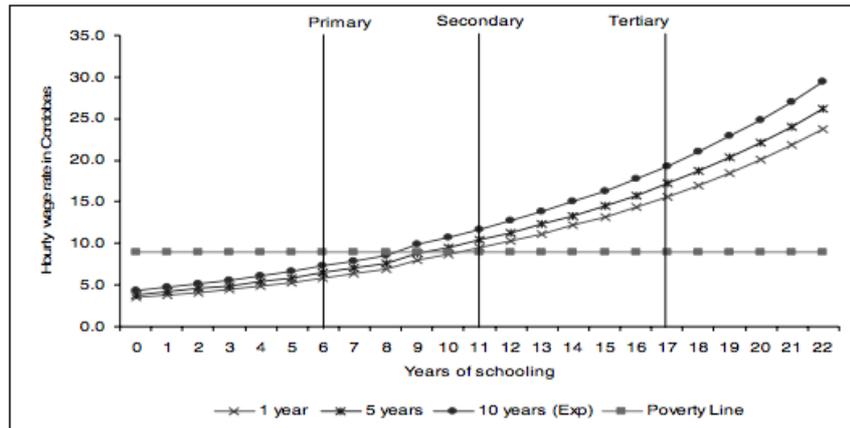
Source: (World Bank, 2008)

As Figure 14 illustrates, there is a wide gap between education between income quintiles and geographic location. For all age groups, a richer population or inhabitant of an urban person belonging to 20%, has on average between four and six years of education than their peers in the poorest quintile and living in a rural zone. This means that “while roughly only 1 out of every 100 girls (or boys) attain 11 years of education in the bottom quintile, 38 (30) out of every 100 girls (boys) do so in the highest quintile”(World Bank, 2008, p. 37)

Low educational attainment presents a huge challenge on the fight against poverty. In order to receive a labor income that exceeds the threshold of poverty, workers require at least 11 years of schooling. As Figure 21 shows, living in poverty is almost certain for individuals with less than complete secondary; “wages are below the poverty line for individuals with complete primary or incomplete secondary, and this holds even with 1, 5 or 10 years of experience. An extra year of experience produces high returns on wages only for individuals who have attained at least 11 years of education (or about complete secondary).”(World Bank, 2008, p. 33). Based on the data from Table 11, it is problematic that even for urban areas, the average years of

education for a population ages 15-64 is a mean of 8.16 years. One question arises: How can the Nicaraguan population strive to get out of poverty if the relation between education attainment and wage does not reach the required base foundation to surpass the poverty line?

Figure 21. Wages above the poverty line require at least 11 years of education



Source: (World Bank, 2008)

It is for this reason that understanding the returns generated by education is important in order to compare their relative results to each educational level to analyze the behavior of the relationship education-income and examining the importance of pushing for further formation of human capital to not only overcome poverty but also to furnish the labor market with high quality labor that can surpass the trap of informal and low paying jobs. But before diving into that issue, since this study seeks to evaluate the Strategic Plan for Education 2011-2015, it is crucial to discuss the role of the government and the costs and investments towards education.

One of the most common definitions used by the Organization for Economic Cooperation and Development (OECD) considers the social investment as the benefits and financial contributions, both public and private, that are directed to households and

individuals in order to help in situations that adversely affect their well-being (OECD, 2007)

From the public sector, the social investment intends to prepare, prevent, support and equip people instead of compensating those who are affected by market deregulation, among other things. This is especially necessary in the case of negative socio-economic consequences that neoliberal policies have caused in the Latin American population that have not guarantee a remarkable and continuous growth and contrarily, have widened the social gaps. (Urteaga, 2013)

From this point of view, public expenditures are not seen as a cost to the economy, but as a series of investments needed to ensure lasting, strong and shared growth and to respond to new social needs, while guaranteeing economic, social and cultural rights. The social investment strategy defines priorities in order to accompany individuals throughout their life trajectories, focusing on groups that are subject to exclusion in society in general (including women, young people and children) and in basic areas of human development (education, health, employment and housing, among others).

As noted, social investment expenditures may include both public and private. However, public spending, particularly public social spending, cover most of that investment. In this regard, public social spending can be defined as the set of resources allocated by the State for the provision of goods and services in different social sectors, especially in education, health, housing and welfare.

The 2007-2010 Economic-Financial Program implemented by the Nicaraguan government explained that in terms of social policy, the government had established a new focus including various objectives, in which one of them was “*the formation of a*

*new generation of programs and projects that would ensure the achievements of the MDGs*” (Banco Central de Nicaragua, 2007, p. 9)

To form these new programs and projects, the Public Investment Program (PIP) was the main instrument of fiscal policy to complement the social and productive long-term efforts. For the period 2014-2018, it has scheduled a PIP of C\$ 98,876.2 million. 24.1 percent of public investment will be allocated to transport (rehabilitation of highways, roads and bridges), energy (19.3%), water and wastewater (12.6%), health and education (13.8%) and the remainder (30.1 %) will be implemented through local government (municipal transfers). Out of the 13.8% correspondent to health and education, only a 5.2% (5,156.4 mill) was destined to education entirely. (See Annex 5)

The education expenditure is breakdown in the following way: Education, for a total of C \$ 5156.4 million:

- Improvement in primary schools in the region of Managua, North, South-Pacific region of Central and North Central (C \$ 1528.8 million).
- Improvement in secondary schools in the region of Managua, Central region, North region, and RAAS (C \$ 1148.7 million), will contribute to the increase the average years of schooling of Nicaraguans.
- Improvement of technical and methodological capacities in vocational training centers in Nicaragua (C \$ 369.3), improve and expand the range of technical courses in nine schools distributed nationwide through improvement of infrastructure in the technical centers and equipment thereof.

Out of this budget, C \$ 4328.76 million (4.4%) was provided to the MINED to implement in projects that will improve the educational infrastructure in the different levels of education. (See Annex 6)

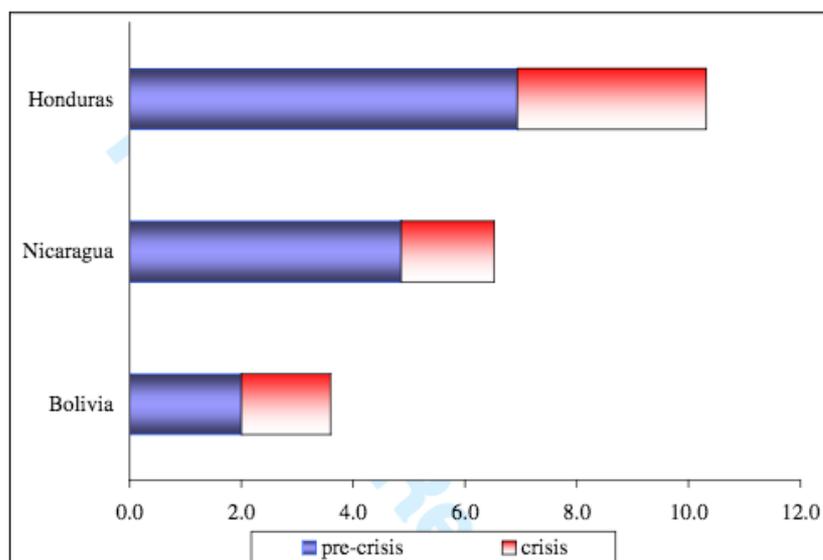
Public expenditure on education has been steadily rise in Nicaragua; in relative terms, in comparison to its Central American neighbors, as Annex 7 shows, it peaked in 2009<sup>11</sup> with a 5.9% but it declined again by the following year, nonetheless, Nicaragua seems to be on the average range of public expenditure. However, it is proven to be insufficient, even at a current rate of 5.2%. A study made by the European Association of Development Research analyzed the economic growth path in Bolivia, Honduras and Nicaragua to determine the possibilities of reaching successful PRSPs and achieving the MDGs(Vos, Ilusions and Disillusions with Poverty Reduction Strategies: Growth, Crisis and the MDGs in Bolivia, Honduras and Nicaragua., 2011). Among the many interesting results, the study deducted two main conclusions: 1) an additional annual social spending was required to achieve the MDGs by 2015 (around 7% for the case of Nicaragua) (see Figure 16) and 2) *“the MDG strategy, through increased public spending on education and health services (...) does not stimulate the required employment and income generation for the poor to achieve poverty reduction targets. Hence, the countries would require complementary production sector and employment policies targeted at the poor.”*(Vos, Ilusions and Disillusions with Poverty Reduction Strategies: Growth, Crisis and the MDGs in Bolivia, Honduras and Nicaragua., 2011, p. 221)

---

<sup>11</sup> It must be taken into consideration that much of the rise in public spending during 2006 and 2008 was related to further increases in consumer subsidies in attempts to protect the poor against the steep rises in imported food and energy prices, which could have explained this rise in education expense.

Figure 22. Additional Public Spending Needed to achieve the MDGs by 2015.

Figure 2 Additional public spending for MDGs needed to achieve education, health and water and sanitation targets by 2015 (percentage of GDP; average annual cost for 2010-2015)<sup>a/</sup>



Source: Vos, et al. (2008) for the pre-crisis scenarios and Sánchez and Vos (2009) for the crisis scenarios.  
<sup>a/</sup> Estimates refer to the difference between the levels of public spending needed to achieve the targets by 2015 in the MDG scenario with foreign borrowing and the baseline scenario under both pre-crisis and crisis baseline assumptions.

Source: (Vos, Illusions and Disillusions with Poverty Reduction Strategies: Growth, Crisis and the MDGs in Bolivia, Honduras and Nicaragua., 2011, p. 219)

It can be inferred from this study, that at the given government expenditure on education of an average of 5%, Nicaragua would not be able to satisfy appropriately the demand on education to reach the MDG 2. Nonetheless, it is important to point out the gradual increased pattern. According to the MINED, the rise in budget comes from an increase in the current public expenditures, mainly for the recruitment of new teachers, salary increase and the social programs for school's food and food security (MINED, 2011).

In terms of government expenditure per student, Nicaragua holds the last place for the Central American region allocating an amount of 78 dollars per student (2010 data). Deconstructing this data per educational level is also important to understand the

direction of the Plan's priorities, however, the evolution of public spending per pupil by level is difficult to pinpoint because of the budget problems of classification according to the level of the school of origin referred to above in the case of teacher compensation. Using the distribution of the budget exercise for the year 2009 is possible to determine the costs per student are shown in Table 12.

Table 12. Cost by student per level (2009)

| <b>Nivel</b>                    | <b>Córdobas</b> |
|---------------------------------|-----------------|
| <b>Preescolar</b>               | <b>2,836</b>    |
| <b>Preescolar comunitario</b>   | <b>491</b>      |
| <b>Primaria</b>                 | <b>3,788</b>    |
| <b>Secundaria</b>               | <b>2,486</b>    |
| <b>Especial</b>                 | <b>9,285</b>    |
| <b>Adultos y alfabetización</b> | <b>650</b>      |
| <b>Formación docente</b>        | <b>30,995</b>   |

*Fuente: División de Estadísticas, MINED.*

Source: MINED

Table 12 shows that in average, a primary student costs more to the government than a student in pre-school or a student in high school. This can be explained by the demand of education by the Nicaraguan population. As school enrollment rates show, primary education demands more from the government than the rest of the levels, which is why they allocate more to this level. (The World Bank, 2012) By 2010, the government expenditure per student was allocated in the following way: 4,440 Córdoba's (11%) per primary student and 1,740 Córdoba's (7%) per secondary student.

That is, public spending per primary student is more than double the public expenditure per secondary student. This spending pattern has continued since 1990. (Arcia, 2011)

Based on these expenditures and on the given public social budget destined to education, the MINED, in alignment to the PRSP and the Plan for Education design three different scenarios that involve different budgeting depending on financial variables<sup>12</sup> for the budget allocation for the Strategic Plan of Education 2011-2014 (See Annex 8). The aspect that must be highlighted from this is that for the Intermediate Scenario, the total cost of the Plan is C \$ 29,017.4 million from which 18,779.0 is destined to Primary Education, C \$ 2,619.5 for Pre-School, C \$ 4298.5 for I Cycle Secondary Education and only C \$ 1,443.5 for II Cycle Secondary Education. There is a clear gap of distribution that accentuates the emphasis on prioritizing Primary Education and gives little offer for Secondary Education in this specific Plan.

The resource allocation pattern of the Strategic Plan for Education 2011-2015 puts in evidence, as mentioned previously, the concentration on Primary Education and little focus on the rest of educational level. Primary education forms the basis for any sort of knowledge. It is the pillar from which knowledge and skills will unfold and from where they will optimize as it is the initial phase. However, education should extend and promote harder the continuation of studies from primary school for various reasons:

---

<sup>12</sup> Based on the construction of hypotheses combining these indicators and targets linked to the priorities of the ESP, three scenarios were simulated with three levels of goals with different scopes a) Baseline scenario; b) Intermediate Scenario and c) Ideal Scenario.

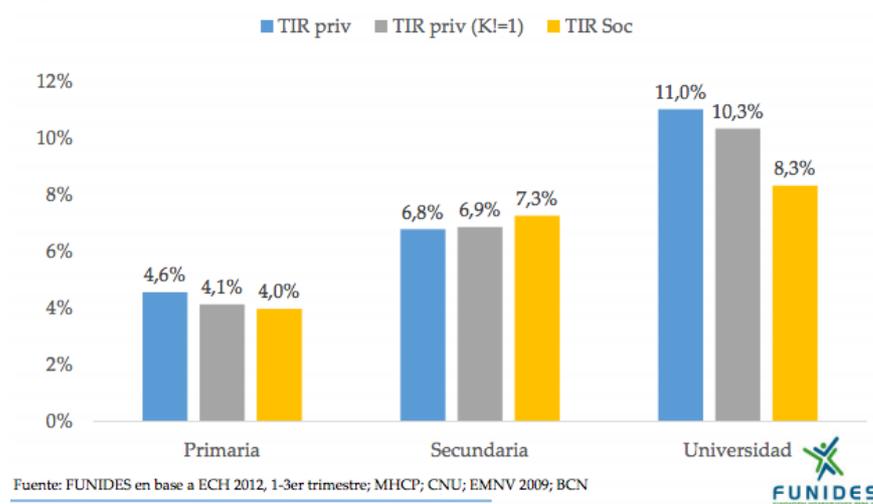
- In the Baseline Scenario, the main variables remain constant (taxes and capex) this scenario shows the unwanted consequences if there is no improvement in the main educational indicators.
- The Ideal Scenario, the most challenging educational goals are achieved and capital spending is sufficient to accommodate enrollment in quality infrastructure.
- In the Intermediate Stage more achievable goals given the context and resource constraints, with ranges that ensure improvement in key educational indicators.

1) As explained formerly, to surpass the threshold of poverty, the Nicaraguan labor needs an average of 11 years of schooling, meaning that they need to at least complete high school to have wages that allow them to rise above the poverty line.

2) The impact of low level of education that suffers most of the workforce is extreme. The analysis of the current structure of the Nicaraguan labor market shows that almost 7 out of 10 jobs in Nicaragua are precarious jobs in the informal sector. Mostly, these are jobs that self-employment and unpaid jobs, mainly performed by family members, and employees of micro informal units predominate. These jobs generate very low income, which keep those who work on them under the poverty line. One may wonder why are these jobs still on the market? Nicaraguan economy is generating, mainly, these only kinds of jobs that can absorb a workforce with the characteristics of Nicaragua, therefore, in order to change these negative features in the workforce, Nicaraguan labor must upgrade their skill/knowledge force in order to create a market that offers labor force of higher quality, forcing the market to demand for more qualified labor or indirectly inviting investment that looks for a high quality labor.

3) Secondary Education is the phase pre-market labor where young adults get to explore their skills and brush their cognitive abilities without the pressures that the labor market induces. A prepared and educated young adult can bring more positive outcomes to the market and the society than a young adult who was inserted into the working force immediately after completing primary school.

Figure 23. Private and Social returns (work income)



Sources:(Mass & Huelva, 2015)

As Figure 17 shows, in terms of private returns (household returns) education is always rentable but the major component that the Figure presents is that in terms of social return, secondary education brings out the most return for the state out of primary or tertiary education.

4) Going back to the Human Capital Theory argument, the main argument rests on the assumption that every household has a utility function, which depends on the human capital of its children and the consumption of all other goods and services. An investment in another year of schooling raises a child's human capital at the cost of reduced consumption of other goods and services. It expects a higher return from higher levels of education, meaning there is a wage premium according to the obtained level of education. There are many studies that have dive into this issue based on the human capital theory, which was previously, explain on the literature review. For the specific case of Nicaragua, the first work on analyzing the returns of education was conducted by Behrman, Wolfe and Blau (1985), who examined the distribution of wages per household and its major components in rural and urban areas in Nicaragua(Behrman, Wolfe, & Blau, 1985). Subsequently, Pessino using data from the Household Survey of

1993 estimated the returns to education in the context of the Nicaraguan labor market, using as criteria for selecting people aged 25 years and under 64 who do not attend school, are employed and receive positive wages (Pessino, 1994). These studies used different criteria to select the study sample, which makes comparability over time.

Most recently, in 2006, De Jong and others conducted a cost-effective analysis comparing different policy funding strategies to reach the MDG 2 for primary level education in Nicaragua. Utilizing a utility maximization model and with selected indicators. The study looked at enrollment rates in primary, secondary and tertiary and various components that could influence the enrollment in each level (See Annex 9). A key result from this study concluded that: *“in terms of education across the different levels, in general, there tended to be strong effects of consumption per capita and the wage premium on the probability of enrollment in education. (...) The large positive effects from consumption per capita show that households will invest in education as their capacity to do so increases. The positive effect of the wage premium shows that households make decisions for enrollment based upon future expected returns and as those returns become more unequal between low and high education levels, the desire to have members in higher education levels also increase. This has very important policy considerations as the increasing returns to education drive enrollment, they also promote inequality for those who still have low education levels and for various reasons, face significant barriers to increasing their education levels.”* (CEPAL, 2009, p. 20).

Considering the above, it is important to study the rates of return for household generated by education and the possibility of higher return rates due to educational mobility.

Based on the Continuous Household Survey (ECH) for 2010 and 2011 on average, the returns to education of employees according to their educational levels

correspond to: 6.2% for primary, 7.4% for technical education, 8.7% for secondary education, 13.5% for university education and 23.2% for Master and Doctoral studies (See Annex 10).

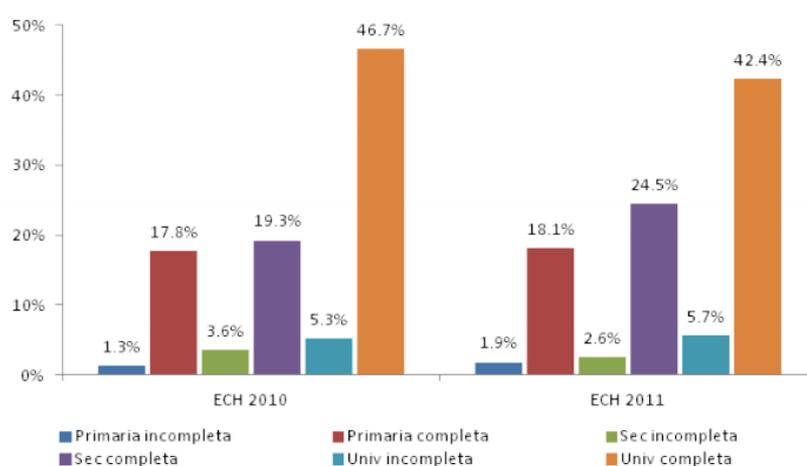
Table 13. Returns Rates of education of employees according to their educational levels

|                             | Total | Male  | Female | Urban | Rural |
|-----------------------------|-------|-------|--------|-------|-------|
| Primary                     | 6,2%  | 7.5%  | 4.2%   | 4.6%  | 6.1%  |
| technical education         | 7.4%  | 8.2%  | 6.9%   | 6.2%  | 9.8%  |
| secondary education         | 8.7%  | 9.1%  | 9.1%   | 8.2%  | 11.0% |
| university education        | 13.5% | 14.3% | 13.8%  | 13.5% | 16.1% |
| Master and Doctoral studies | 23.3% | 22.1% | 24.1%  | 40.0% |       |

Source: Author's elaboration using ECH 2010 and 2011

FUNIDES also expressed data regarding the return rates based on completion of educational level.

Figure 24. Estimated return rate from education complete vs. incomplete



Source: (FUNIDES, 2013)

Continuing the discussion on wage premium, the Figure above shows the existence of significant awards that the labor market is willing to pay to those who complete the final year of each level. The ‘award’ for the last year of each educational level, has much higher returns to previous years, suggesting the existence of sheepskin effects<sup>13</sup> in the labor market in Nicaragua. Note that returns the last year of primary education is 11 times than the average premium of the first five years of primary education. For high school, the rate of return of senior year is seven times higher than the average return rate of the previous four years. For higher education, the return of last year is eight times higher than the average rate of return of the years studied throughout the university. (FUNIDES, 2013, p. 17)

It is also important to weight the returns from education with the actual costs of education per household. Based on data from the LSMS 2009, it is possible to calculate the offset between these variables.

Table 14. Salary Rates and Education costs per educational level (2010)

| Educational Level   | Average Main Salary | Average Income | Education expenditure per household depending on educational level and property of the school in cordobas (Public School) |
|---------------------|---------------------|----------------|---|
| No schooling        | 10,057.9            | 9,951.3        | -   |
| Primary Education   | 13,035.4            | 13,003.1       | 2,796.37  |
| Secondary Education | 15,624.5            | 15,994.3       | 3,110.02  |
| Tertiary Education  | 29,279.5            | 30,654.9       | 5,733.31  |

Source: Author’s elaboration using ECH 2010 and 2011 and LSMS 2009 (Annex 10 for education costs)

Based on this table, for a lapse of six years (duration of primary education), at 2010 prices, the total expenditure per household for Primary Education will be that of

<sup>13</sup>**Sheepskin effects**, also known as credential **effects**, refer to increases in labour market earnings associated with the completion of a diploma or degree — such as high school or university graduation

16,778.22 in total. The annual salary for someone who only has completed primary education is 13,035.4. This means that one-year of salary covers almost the entirety of initial investment in education. By including direct costs that individuals and households (transportation, supplies, text, etc.) assumed for each year of further study, it is observed that the rate of return of employees for 2011 corresponds to: 5.3% primary, 7.6% 12.2% secondary and university. And this same pattern happens for all educational levels. This proves that for the case of Nicaragua, investment on education is highly rentable even though when the private costs that families pay to send their children to study observed a significant increase as it progresses in the educational level of the student, it still delivers better return rates base of the desirability for the wage premium that the market is willing to pay for.

In matters of social returns (not private household ones) from education, FUNIDES continues its study by estimating the social rate of return and including the social costs of each level of education benefits, however due to data limitations, only the cost per student incurred by the country to fund public education was used, finding for the end of 2011, the social rate of return of employees corresponded to: primary 4.6%, 7.2% and 8.3% secondary college.

Given these figures, FUNIDES concluded that: “The social rate of return shows that the decision to invest in education is profitable for society, obtaining the highest social returns for university and secondary education. (...) It should also be noted the importance of the social profitability of secondary education, because with a lower social cost, a social return very close to the social return of university education is obtained. These results provide evidence to justify the importance of setting goals that transcend coverage of primary education, and secondary education is profitable for

society. Therefore, it should undertake efforts to ensure that an increasing proportion of young Nicaraguans can access and complete secondary education.

#### **IV. CONCLUSIONS:**

Based on the extensive analysis and findings of this study, it is observable that the Nicaraguan labor market offers a premium wage to those who complete the final year of each level of education. By the end of 2011, the returns of the last year of education for primary, secondary and university education corresponded to 18.1%, 24.5% and 42.4%, respectively (Laguna & Porta, 2013). Such returns are considered above an average prize gained in previous years of each educational level.

It should also be noted the importance of the social profitability of secondary education since with a lower social cost, social return generated by secondary education is very close to the social return obtained from university education. These results provide evidence to justify the importance of setting goals that transcend coverage of primary education, and that secondary education is profitable for society. Therefore, Nicaraguan educational policies should undertake efforts to ensure that an increasing proportion of young Nicaraguans can access and complete secondary education since primary education seems to have solid pillars both in enrollment and completion rates.

One of the limitations of this paper is the analysis of the social rate of return. To estimate the social rate of return, social costs and benefits of each of the educational levels should be included, however due to limitations of data, only the cost per student incurred by the country was used. Nonetheless, one perceivable aspect from the social rate of return shows that the decision to invest in education is profitable for society, obtaining the highest social returns for university and secondary education.

Based on the evidence presented, Nicaragua's main public policy should identify educational investment as a primordial objective; investment in education is profitable for individuals, families and society, thus increasing the coverage and quality of education should be an integral part of the Human Development Plan of Nicaragua. The

Strategic Plan of Education 2011-2015 proposes good and interesting programs with the right aims but without government financial backup, it is of little use to have an unused policy.

As the hypothesis of this research proposed, the goal of achieving universal primary education is insufficient to overcome poverty for the case of Nicaragua and foster the development of human capital; as the world transitions from the era of the MDGs to the SDGs epoch, it is required to go for further and to pursue better education, a serious commitment must be taken by the Government of Nicaragua as actors committed to education in the country that transcends the basic standard presented by the MDGs. It is important to understand that a goal is positive and optimal in the sense of provision of directions. However, it is dangerous to channel national targets to match the indicators of a general worldwide poverty initiative (Vos, *Illusions and Disillusions with Poverty Reduction Strategies: Growth, Crisis and the MDGs in Bolivia, Honduras and Nicaragua*, 2010). The MDGs are not a mandatory package but it is a set of guidelines that countries should differ on how to integrate them into their development strategies.

Nonetheless, special focus must be paid to current policies and their respective results. Whilst the goals of universal primary education are gradually being achieved, a strong commitment from Nicaragua's government to improve education must raise higher educational goals and continue working in imitation of countries that paid special attention to their human capital such as South Korea by increasing coverage, completion of secondary education and improve educational quality. This increase in coverage must be accompanied inherently by quality improvements to avoid falling into the trap of offering a broad curriculum that does not allow deepening of the content, or the acquisition of skills and competencies necessary for life and respond adequately

to the demands of the labor market. Therefore, Nicaragua should be proposing more ambitious goals, such as achieving a higher proportion of young people complete secondary education, targeting students to gain mastery of skills and core competencies to develop as individuals and as productive agents for society.

It is important to exalt the positive change in programs and policies that the Nicaragua government has imposed to offer a better education for its citizens. Though the path to ensure a sustainable educational growth is still far, the current improvements should be praised and the focus should be directed to tackling the deficit on the current system.

## LIST OF REFERENCES

- Acemoglu, D. (2012). *Lecture in Labor Economics*. Retrieved October 25th, 2015, from MIT: <http://economics.mit.edu/files/4689>
- Acevedo Vogl, A. J. (n.d.). *Nicaragua: The “Millennium Development Goals” (MDGs) and the IMF program*. Retrieved October 15, 2015, from Choike: [http://www.choike.org/documentos/ifis\\_odm\\_fmi\\_nicaragua.pdf](http://www.choike.org/documentos/ifis_odm_fmi_nicaragua.pdf)
- Angel-Urdinola, D. F., & Laguna, J. R. (2008). *Opportunities for Human Development: Access and Quality of Education in Nicaragua*. Washington: World Bank.
- Arcia, G. (2011). *Financiamiento de la educación pública en Nicaragua, 2010*. Managua: IDB.
- Babalola, J. (2003). *Budget Preparation and Expenditure Control in Education*. Ibadan Awemark Industrial Printers.
- Banco Central de Nicaragua. (2007). *PROGRAMA ECONÓMICO-FINANCIERO*. Managua: Banco Central de Nicaragua.
- Banco Mundial. (2012b). *Mejores Empleos en Nicaragua: el rol del capital humano*. . Departamento de Desarrollo Humano Región de América Latina y el Caribe. . Washington D.C.: World Bank.
- Bastagli, F. (2009). *From Social Safety Net to Social Policy? The role of conditional cash transfers in welfare state development in Latin America*. London: Centre for Analysis of Social Exclusion.
- Becker, G. S. (1992). Nobel lecture: The economic way of looking at life. *Journal of Political Economy*, 101, 385-409.

- Behrman, J., Wolfe, B., & Blau, D. (1985). Human Capital and Earnings Distribution in a Developing Country: The Case of Prerevolutionary Nicaragua. *Economic Development and Cultural Change*, 34 (1), 1-29.
- Belli Pereira, H., & Asensio Flores, C. (2015). *Propuesta de Agenda Educativa de Nacion*. Nicaragua: FUNIDES.
- Castillo Bermudez, J. (2014, September 19). Educación sin rumbo en Nicaragua . *La Prensa* .
- CEPAL. (2009). *ANÁLISIS DE SELECCIONADOS MILLENNIUM DEVELOPMENT GOALS IN NICARAGUA*. Mexico: CEPAL.
- Duarte, J., Garguilo, C., & Moreno, M. (2011). *Infraestructura escolar y aprendizajes en la Educación Básica en América Latina: Un análisis a partir del Serce*. Washington D.C.: IDB.
- Foro Educativo Nicaragüense EDUQUEMOS . (2014). *INFORME DE PROGRESO EDUCATIVO NICARAGUA*. Managua: Programa de Promoción de la Reforma Educativa en América Latina y el Caribe, PREAL .
- FUNIDES. (2013). *Análisis de la Rentabilidad de la Educación en Nicaragua*. Managua: FUNIDES.
- Hanushek , E. A., & Wößmann, L. (2007). *The Role of Education Quality in Economic Growth*. Washington D.C: World Bank Policy Research Working Paper .
- Hanushek, E., & Woessmann, L. (2012). Do better schools lead to more growth? *Journal of Economic Growth*, 17, 267-321.
- Hanushek, E., & Woessmann, L. (2007). *The Role of Education Quality in Economic Growth*. Washington D.C.: World Bank.

- Hanushek, J., Lochner, L., & Todd, P. (2003). *Fifty Years of Mincer Earnings Regressions*. Netherlands: National Bureau of Economic Research.
- Instituto de Estudios Estrategicos y Politicas Publicas. (2012). *La Educacion Primaria en Nicaragua: Condiciones que favorecen u obstaculizan el aumento de la matricula, la retencion y la promocion escolar*. Managua: IEEPP.
- INTERVIDA. (2009). *Maltrato y Trabajo Infantil: Dos males que erradicar*. Managua: INTERVIDA.
- Knudsen, H. V. (2008). *Secondary Education Issues and Challenges*. New York: Nova Science Publishers.
- Laguna , J., & Porta, E. (2013). *Análisis de la Rentabilidad de la Educación en Nicaragua*. Managua: FUNIDES.
- Laguna, J. R., & Porta, E. (2008). *Determinantes de la Calidad de la Educacion e Incidencia del Gasto Publico*. Managua: Banco Mundial.
- Levin, H., & Kelley, C. (1994). Can education do it along? *Economics of Education Review*, 13 (1), 97-108.
- Marimuthu, M., Arokiasamy, L., & Ismail, M. (2008). Human capital development and its impact on firm performance: Evidence from developmental economics. *The Journal of International Social Research*, 2 (8).
- Mass, H., & Huelva, L. (2015). *Competencias que demandan las empresas en Nicaragua y el retorno de la educación*. Managua: FUNIDES.
- Mincer, J. (1958). Investment in Human Capital and Personal Income Distribution. *Journal of Political Economy*, 66 (4), 281-302.
- MINED. (2011). *Plan Estrategico de Educacion 2011-2015*. Managua: MINED.

- Ministerio de Educacion, Cultura y Deportes. (2004). *El Desarrollo de la Educacion*. Managua: MECD.
- Näslund-Hadley , E., Meza, D., Arcia, G., Rápalo , R., & Rondon, C. (2012). *Educación en Nicaragua: Retos y Oportunidades*. Washington: Banco Interamericano de Desarrollo.
- Nayyar , D. (2012). *The MDGs after 2015: Some reflections on the possibilities* . New York: UN System Task Team on the Post-2015 UN Development Agenda.
- OECD. (2007). *The Social Expenditure database: An Interpretive Guide SOCX 1980-2003*. Paris: OECD.
- Olaniyan, D., & Okemakinde, T. (2008). Human Capital Theory: Implications for Educational Development. *European Journal of Scientific Research*, 24 (2).
- Organization for Economic Co-operation and Development. (2001). *The Well-Being of Nations: The Role of Human and Social Capital*. Paris: OECD.
- Pessino, C. (1994). *Labor Markets in Nicaragua after the Stabilization Plan: Labor Force and Human Capita*. Banco Mundial.
- Pritchett, L. (2000). Wher has all the education gone? *World Bank Economic Review*, 15 (3), 367-391.
- Programa Estado de la Nación. (2014). *Estadísticas de Centroamérica 2014*. San José: Programa Estado de la Nación.
- Schultz, T. (1961). Investment in Human Capital. *The American Economic Review*, 51 (1), 1-17.
- Spence, M. (1973). Job market signalling. *Quarterly Journal of Economics*, 87 (3), 355-375.

- The World Bank. (2012). *World Development Indicators (2012)*. Retrieved November 4, 2010, from World Development Indicators (2012). Government Expenditure per student. Atlas method :  
<http://databank.worldbank.org/data/reports.aspx?source=2&country=NIC&series=&period=#>
- Urteaga, E. (2013, January). Estado de bienestar e inversión social en Europa. *Comunitaria, Revista Internacional de Trabajo Social y Ciencias Sociales* , 7, pp. 9-21.
- Vijil, J. (2008, May). *Our Education System Is Increasing Poverty and Inequality*. Retrieved October 15, 2015, from Envio Digital:  
<http://www.envio.org.ni/articulo/3779>
- Vos, R. (2010). Illusions and Disillusions with Poverty Reduction Strategies: Growth, Crisis and the MDGs in Bolivia, Honduras and Nicaragua. *European Journal of Development Research*, 23, 208-228.
- Vos, R. (2011). Illusions and Disillusions with Poverty Reduction Strategies: Growth, Crisis and the MDGs in Bolivia, Honduras and Nicaragua. *European Journal of Development Research* , 208-228.
- World Bank. (2008). *Nicaragua Poverty Assessment*. Washington D.C.: World Bank.

## APPENDIX

Annex 1. Preliminary Results from the Survey for Child Labor (2005)

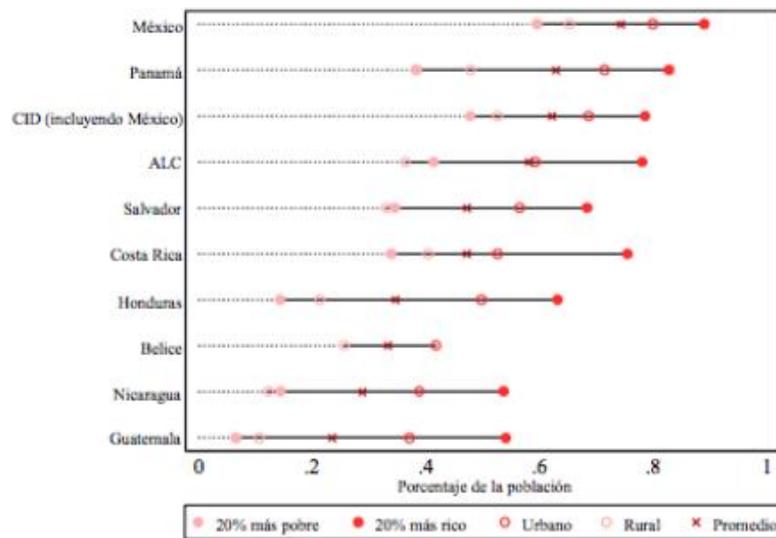
**Resultados Preliminares de la Encuesta de Trabajo Infantil realizada en el Año 2005.**

| <b>ENCUESTA DE TRABAJO INFANTIL<br/>POBLACIÓN LABORAL ACTIVA POR RAMA DE ACTIVIDAD ECONÓMICA</b> |                       |                       |                   |                |
|--|-----------------------|-----------------------|-------------------|----------------|
| <b>Sector Económico</b>  | <b>05-09<br/>AÑOS</b> | <b>10-13<br/>AÑOS</b> | <b>14-17 AÑOS</b> | <b>Total</b>   |
| <i>Agric, Silv. Caza y Pesca</i>   | 10,895                | 42,213                | 82,272            | <b>135,380</b> |
| Minas y Canteras   | 247                   | 541                   | 180               | <b>968</b>     |
| Industria Manufacturera  | 1,663                 | 6,117                 | 15,977            | <b>23,757</b>  |
| Electricidad, Gas y Agua   |                       | 106                   | 318               | <b>424</b>     |
| Construcción   | 146                   | 212                   | 4,294             | <b>4,652</b>   |
| Comercio   | 4,989                 | 14,833                | 31,870            | <b>51,692</b>  |
| Restaurantes y Hoteles   | -                     | -                     | -                 | -              |
| Transp. Almac. Comunic.  |                       | 424                   | 2,799             | <b>3,223</b>   |
| Establec. Financiero   | 292                   | 212                   | 1,209             | <b>1,713</b>   |
| Serv. Comunes  | 978                   | 2,746                 | 13,687            | <b>17,411</b>  |
| <b>Total</b>   | <b>19,210</b>         | <b>67,404</b>         | <b>152,606</b>    | <b>239,220</b> |

Source: (INTERVIDA, 2009)

## Annex 2. Secondary I Cycle completion

### Tasas de culminación primer ciclo de secundaria. Jóvenes de 15 a 19 años.



Fuente: BID/EDU, Encuesta Hogares 2009.

Source: (Instituto de Estudios Estrategicos y Politicas Publicas, 2012)

## Annex 3: Literacy Rates for youth from the poorest household and rural areas.

**Table 3: Youth from the poorest households and rural areas have the lowest literacy rates.**

|                                 | 1993        | 1998        | 2001        | 2005        |
|---------------------------------|-------------|-------------|-------------|-------------|
| <b>All</b>                      | <b>82.3</b> | <b>85.6</b> | <b>86.4</b> | <b>90.4</b> |
| Extreme Poor                    | 65.5        | 65.0        | 65.6        | 77.1        |
| Moderately Poor                 | 88.9        | 89.4        | 89.8        | 87.0        |
| Poor                            | 75.1        | 76.0        | 76.1        | 83.9        |
| Non-poor                        | 93.8        | 93.7        | 94.3        | 95.8        |
| <b>Urban areas</b>              | <b>94.3</b> | <b>94.2</b> | <b>93.9</b> | <b>95.8</b> |
| Extreme Poor                    | 81.6        | 81.2        | 74.6        | 85.6        |
| Moderately Poor                 | 95.2        | 96.1        | 94.8        | 92.9        |
| Poor                            | 89.8        | 88.2        | 88.0        | 91.5        |
| Non-poor                        | 96.3        | 97.9        | 96.0        | 97.6        |
| <b>Rural areas</b>              | <b>70.5</b> | <b>75.4</b> | <b>75.7</b> | <b>83.0</b> |
| Extreme Poor                    | 60.4        | 63.9        | 63.3        | 74.5        |
| Moderately Poor                 | 75.7        | 81.7        | 80.2        | 82.4        |
| Poor                            | 65.4        | 72.5        | 69.1        | 79.3        |
| Non-poor                        | 84.5        | 86.2        | 88.9        | 90.6        |
| <b>Socio-economic Quintiles</b> |             |             |             |             |
| Poorest quintile                | 66.2        | 68.0        | 67.2        | 78.3        |
| Q2                              | 77.1        | 79.5        | 81.5        | 87.3        |
| Q3                              | 88.3        | 90.5        | 88.0        | 92.1        |
| Q4                              | 93.0        | 90.4        | 94.7        | 94.9        |
| Richest quintile                | 96.8        | 97.1        | 98.1        | 99.0        |

Source: Authors using 1993, 1998, 2001 and 2005 LSMS data

Source: (World Bank, 2008)

Annex 4: Quality of education based on students with knowledge levels lower than the minimum level

**Table 2.12: Students with knowledge levels lower than Minimum Level (%)**

|                                      | 3rd level (grado) |             | 6th level   |             |
|--------------------------------------|-------------------|-------------|-------------|-------------|
|                                      | Spanish           | Mathematics | Spanish     | Mathematics |
| <b>National</b>                      | 71.2              | 61.7        | 69.7        | 88.1        |
| Geographic area                      |                   |             |             |             |
| Urban                                | 66.4              | 62.2        | 64.3        | 86.4        |
| Rural                                | 75.5              | 61.2        | 77.4        | 90.6        |
| Region                               |                   |             |             |             |
| Managua                              | 66.9              | 63.6        | 63.8        | 87.1        |
| <b>Managua Urban</b>                 | <b>62.7</b>       | <b>59.0</b> | <b>60.5</b> | <b>85.4</b> |
| Managua Rural                        | 79.5              | 77.4        | 74.8        | 93.1        |
| Pacific                              | 72.3              | 69.2        | 71.5        | 89.6        |
| Pacific Urban                        | 70.9              | 67.6        | 68.4        | 88.8        |
| Pacific Rural                        | 73.5              | 70.5        | 75.2        | 90.5        |
| Central                              | 71.1              | 53.3        | 70.7        | 86.4        |
| <b>Central Urban</b>                 | <b>63.8</b>       | <b>58.6</b> | <b>61.8</b> | <b>83.4</b> |
| Central Rural                        | 75.4              | 50.2        | 79.3        | 89.4        |
| Atlantic                             | 77.9              | 61.6        | 81.1        | 91.8        |
| Atlantic Urban                       | 77.7              | 69.7        | 75.7        | 92.7        |
| Atlantic Rural                       | 77.8              | 58.7        | 86.1        | 91.3        |
| Type of school                       |                   |             |             |             |
| Public non-autonomous                | 77.6              | 64.6        | 74.0        | 89.7        |
| <b>Private with subsidy</b>          | <b>57.7</b>       | <b>55.3</b> | <b>53.3</b> | <b>75.5</b> |
| Private with subsidy                 | 59.6              | 55.1        | 50.4        | 84.5        |
| Public autonomous                    | 71.7              | 62.0        | 74.0        | 90.1        |
| Mode (Modalidad)                     |                   |             |             |             |
| Regular                              | 69.6              | 63.7        | 67.0        | 87.7        |
| <i>Multigrado</i>                    | 76.1              | 55.5        | 84.3        | 90.5        |
| Shift (Turno)                        |                   |             |             |             |
| Morning                              | 71.2              | 60.5        | 74.6        | 87.7        |
| Afternoon                            | 71.4              | 65.0        | 65.3        | 88.6        |
| Student's gender (sexo)              |                   |             |             |             |
| Male                                 | 73.4              | 60.3        | 68.8        | 87.0        |
| Female                               | 69.0              | 63.1        | 71.3        | 90.2        |
| Speaks another language than Spanish |                   |             |             |             |
| Another language                     | 79.0              | 67.2        | 74.8        | 88.3        |
| Spanish                              | 70.7              | 61.4        | 69.4        | 88.1        |
| Repeater (Repitente)                 |                   |             |             |             |
| Repeater                             | 78.5              | 70.0        | 76.6        | 91.3        |
| Non Repeater                         | 69.7              | 60.0        | 69.3        | 88.0        |
| Over-age                             |                   |             |             |             |
| Over-age                             | 73.4              | 59.8        | 79.0        | 91.9        |
| Normal                               | 69.1              | 63.6        | 62.0        | 85.1        |
| Parent's education level             |                   |             |             |             |
| No studies (sin estudios)            | 71.6              | 60.3        | 68.9        | 88.5        |
| Adults education                     | 74.7              | 61.0        | 77.9        | 89.6        |
| Primary                              | 74.0              | 62.7        | 74.2        | 89.7        |
| Secondary                            | 68.1              | 63.8        | 66.5        | 87.5        |
| <b>University</b>                    | <b>51.1</b>       | <b>49.7</b> | <b>53.2</b> | <b>80.9</b> |
| <b>Postgraduate</b>                  | <b>50.0</b>       | <b>37.5</b> | <b>54.8</b> | <b>70.0</b> |

Source: MECD (2004)

Source:(World Bank, 2008)

Annex 5: PIP 2014-2018 distribution per economic sector

| PIP 2014 - 2018 por sector económico      |                  |                     |                                 |                 |                 |                 |              |
|---|------------------|---------------------|---------------------------------|-----------------|-----------------|-----------------|--------------|
| Descripción                               | Recursos Propios | Recursos del Tesoro | Ingresos con Destino Especifico | Donación        | Préstamo        | Total           | %            |
| Millones de Córdoba                       |                  |                     |                                 |                 |                 |                 |              |
| <b>TOTAL</b>                              | <b>700.7</b>     | <b>44,054.4</b>     | <b>7.2</b>                      | <b>11,189.5</b> | <b>42,924.5</b> | <b>98,876.2</b> | <b>100.0</b> |
| Obras y servicios comunitarios            |                  | 23,565.8            |                                 | 139.8           | 128.7           | 23,834.3        | 24.1         |
| Transporte                                | 146.5            | 7,831.2             |                                 | 1,973.4         | 13,481.6        | 23,432.6        | 23.7         |
| Energía                                   | 398.0            | 1,906.9             |                                 | 917.8           | 15,895.2        | 19,117.8        | 19.3         |
| Agua, alcantarillado y saneamiento        | 143.7            | 1,756.4             |                                 | 5,216.7         | 5,326.0         | 12,442.7        | 12.6         |
| Salud                                     |                  | 3,227.6             |                                 | 1,271.2         | 4,042.0         | 8,540.7         | 8.6          |
| Educación                                 |                  | 2,764.5             |                                 | 1,574.5         | 817.3           | 5,156.4         | 5.2          |
| Administración del estado                 |                  | 2,104.4             | 7.2                             | 43.2            | 987.3           | 3,142.1         | 3.2          |
| Vivienda                                  |                  | 85.7                |                                 | 16.1            | 1,412.5         | 1,514.3         | 1.5          |
| Cultura, deportes y recreación            |                  | 670.3               |                                 |                 | 89.3            | 759.6           | 0.8          |
| Agropecuario, forestal y pesca            |                  | 28.9                |                                 | 6.4             | 530.6           | 565.9           | 0.6          |
| Comunicaciones                            | 12.5             | 60.0                |                                 |                 | 119.8           | 192.3           | 0.2          |
| Minería, industria, comercio y turismo    |                  | 52.6                |                                 | 18.0            | 24.2            | 94.9            | 0.1          |
| Protección, asistencia y seguridad social |                  |                     |                                 | 12.5            | 70.0            | 82.5            | 0.1          |

Fuente: MHCP

Source: Banco Central de Nicaragua, 2014

Annex 6: PIP 2014-2018 distribution institution

| PIP 2014 - 2018 por institución |                  |                     |                                 |                 |                 |                 |
|---------------------------------|------------------|---------------------|---------------------------------|-----------------|-----------------|-----------------|
| Descripción                     | Recursos Propios | Recursos del Tesoro | Ingresos con Destino Especifico | Donación        | Préstamo        | Total           |
| Millones de Córdoba             |                  |                     |                                 |                 |                 |                 |
| <b>Total</b>                    | <b>700.7</b>     | <b>44,054.4</b>     | <b>7.2</b>                      | <b>11,189.5</b> | <b>42,924.5</b> | <b>98,876.2</b> |
| <b>Gobierno Central</b>         |                  | <b>41,229.5</b>     | <b>7.2</b>                      | <b>6,473.1</b>  | <b>23,235.8</b> | <b>70,945.6</b> |
| MTI                             |                  | 7,555.8             |                                 | 1,837.0         | 13,366.9        | 22,759.7        |
| MINSA                           |                  | 3,032.3             |                                 | 1,174.0         | 3,172.8         | 7,379.1         |
| MINED                           |                  | 2,601.5             |                                 | 1,414.9         | 312.4           | 4,328.8         |
| MEM                             |                  | 552.4               |                                 | 721.6           | 1,257.6         | 2,531.6         |
| Alcaldías                       |                  | 23,545.7            |                                 |                 |                 | 23,545.7        |
| Resto                           |                  | 3,941.9             | 7.2                             | 1,325.6         | 5,126.2         | 10,400.9        |
| <b>Empresas Públicas</b>        | <b>700.7</b>     | <b>2,824.9</b>      |                                 | <b>4,716.3</b>  | <b>19,688.7</b> | <b>27,930.6</b> |
| ENACAL                          | 143.7            | 1,724.1             |                                 | 4,520.2         | 4,875.7         | 11,263.6        |
| ENATREL                         | 188.2            | 970.6               |                                 | 196.2           | 8,413.7         | 9,768.7         |
| ENEL                            | 209.7            |                     |                                 |                 | 6,174.9         | 6,384.6         |
| Resto                           | 159.0            | 130.2               |                                 |                 | 224.4           | 513.6           |

Fuente : MHCP

Source: Banco Central de Nicaragua, 2014

**INDICADORES SOCIALES**

**Participación de gasto público en educación**

*Monto del gastopúblicodestinado a los programas de educación, comoporcentaje del PIB.*

*Fuente: Belice: Instituto de Estadística y Banco Mundial. Costa Rica y El Salvador: Ministerio de Hacienda. Guatemala y Honduras: Ministerio de Finanzas. Nicaragua: Banco Central. Panamá: Instituto Nacional de Estadística y Censo (INEC). ALC, OECD y Mundo: UNESCO.*

| País                        | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|-----------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| <i>(porcentaje del PIB)</i> |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Belice                      | 5.0  | 5.8  | 5.5  | 5.2  | 5.3  |      | 6.2  | 6.4  | 6.5  | 6.8  | 6.6  | 7.2  | 6.9  |      |
| Costa Rica                  | 4.7  | 5.1  | 5.5  | 5.5  | 5.4  | 5.2  | 5.0  | 5.2  | 5.7  | 6.8  | 7.2  | 7.0  | 7.2  |      |
| El Salvador                 | 2.7  | 3.4  | 3.3  | 3.1  | 2.9  | 2.9  | 2.8  | 2.9  | 3.0  | 3.7  | 3.5  | 3.4  | 3.0  |      |
| Guatemala                   | 1.7  | 2.1  | 1.9  | 1.9  | 1.9  | 2.1  | 2.1  | 2.1  | 2.0  | 3.3  | 3.0  | 2.9  | 3.0  | 2.9  |
| Honduras                    | 4.4  | 5.1  | 5.2  | 6.2  | 6.2  | 6.2  | 6.2  | 7.1  | 7.3  | 7.0  | 7.3  | 6.4  | 6.3  | 6.2  |
| Nicaragua                   | 4.0  | 3.6  | 4.0  | 4.7  | 4.4  | 4.7  | 4.8  | 5.1  | 5.3  | 5.9  | 5.4  | 5.0  |      |      |
| Panamá                      | 4.0  | 4.4  | 4.2  | 3.9  | 3.8  | 3.8  | 4.1  | 3.8  | 3.9  | 4.0  | 3.7  | 3.8  | 3.7  | 3.8  |
| Centroamérica               | 3.8  | 4.2  | 4.2  | 4.4  | 4.3  | 4.2  | 4.5  | 4.7  | 4.8  | 5.4  | 5.3  | 5.1  |      |      |
| ALC                         | 4.0  | 4.3  | 4.0  | 3.9  | 3.9  |      | 3.9  | 3.8  | 4.9  | 5.8  | 4.7  | 4.5  |      |      |
| OCDE                        | 5.0  | 5.2  | 5.3  | 5.4  | 5.3  | 5.3  | 5.3  | 5.0  | 5.2  | 5.5  | 5.6  | 5.3  |      |      |
| Mundo                       | 4.0  | 4.2  | 4.1  | 4.3  | 4.3  | 4.3  | 4.5  | 4.4  | 4.6  | 5.1  | 4.9  |      |      |      |

Annex 8. Total Cost of the Strategic Plan for Education 2011-2015 by scenario.

| Niveles/Tipos de Gasto        | Escenario Tendencial | Escenario Intermedio | Escenario Ideal |
|-------------------------------|----------------------|----------------------|-----------------|
| <b>TOTAL PLAN ESTRATEGICO</b> | <b>24,832.0</b>      | <b>29,017.4</b>      | <b>36,652.7</b> |
| <b>Gasto Corriente Total</b>  | <b>22,415.0</b>      | <b>23,137.7</b>      | <b>25,810.5</b> |
| <b>Gasto de Capital</b>       | <b>2,418.0</b>       | <b>5,879.7</b>       | <b>10,842.2</b> |
| <b>Preescolar</b>             | <b>1,355.5</b>       | <b>2,619.5</b>       | <b>3,658.5</b>  |
| <b>Gasto Corriente Total</b>  | <b>1,270.6</b>       | <b>1,683.5</b>       | <b>1,956.2</b>  |
| <b>Gasto de Capital</b>       | <b>84.9</b>          | <b>935.9</b>         | <b>1,702.3</b>  |
| <b>Primaria</b>               | <b>15,450.3</b>      | <b>18,779.0</b>      | <b>22,875.6</b> |
| <b>Gasto Corriente Total</b>  | <b>15,107.8</b>      | <b>15,141.5</b>      | <b>16,200.2</b> |
| <b>Gasto de Capital</b>       | <b>342.5</b>         | <b>3,637.5</b>       | <b>6,675.1</b>  |
| <b>Secundaria I Ciclo</b>     | <b>3,345.5</b>       | <b>4,298.5</b>       | <b>5,717.4</b>  |
| <b>Gasto Corriente Total</b>  | <b>3,278.3</b>       | <b>3,475.9</b>       | <b>3,736.2</b>  |

|  |                |                |                |
|--|----------------|----------------|----------------|
| <b>Gasto de Capital</b>                      | <b>67.2</b>    | <b>822.6</b>   | <b>1,981.2</b> |
| <b>Secundaria II Ciclo</b>                   | <b>1,254.6</b> | <b>1,443.6</b> | <b>1,981.7</b> |
| <b>Gasto Corriente Total</b>                 | <b>1,254.6</b> | <b>1,443.6</b> | <b>1,981.7</b> |
| <b>Gasto de Capital</b>                      | <b>0</b>       | <b>0</b>       | <b>0</b>       |
| <b>Formación Inicial</b>                     | <b>583.1</b>   | <b>497.3</b>   | <b>657.9</b>   |
| <b>Gasto Corriente Total</b>                 | <b>583.1</b>   | <b>497.3</b>   | <b>657.9</b>   |
| <b>Gasto de Capital</b>                      | <b>0</b>       | <b>0</b>       | <b>0</b>       |
| <b>Educación Especial</b>                    | <b>248.8</b>   | <b>248.7</b>   | <b>315.8</b>   |
| <b>Gasto Corriente Total</b>                 | <b>248.8</b>   | <b>248.7</b>   | <b>315.8</b>   |
| <b>Gasto de Capital</b>                      | <b>0</b>       | <b>0</b>       | <b>0</b>       |
| <b>Alfabetización y Educación de Adultos</b> | <b>671.4</b>   | <b>647.2</b>   | <b>962.2</b>   |
| <b>Gasto Corriente Total</b>                 | <b>671.4</b>   | <b>647.2</b>   | <b>962.2</b>   |
| <b>Gasto de Capital</b>                      | <b>0</b>       | <b>0</b>       | <b>0</b>       |

## Annex 9. Regression model with elasticity for enrollment in primary and secondary education

ELASTICITIES FOR ENROLMENT IN EDUCATION, PRIMARY LEVEL, 2001

(Various units)

| Variable  | Logit model |         | Proportions model |         |
|---|-------------|---------|-------------------|---------|
|   | Elasticity  | P value | Elasticity        | P value |
| Sex (1 = Male)  | -0.0251     | 0.023   | -0.0685           | 0.422   |
| Consumption per capita                                    | 0.0791      | 0.000   | 0.0000            | 0.564   |
| Number of members of the household                        | 0.0326      | 0.073   | 0.0091            | 0.829   |
| Average infrastructure in municipality (measured by rent) | 0.0049      | 0.535   | -0.0809           | 0.000   |
| Proportion of population living in urban area             | 0.0232      | 0.001   | -0.0063           | 0.656   |
| Years of study of head of household                       | 0.0455      | 0.000   | 0.0413            | 0.123   |
| Wage premium for primary/secondary education              | 0.5167      | 0.087   | 0.4578            | 0.033   |
| Average municipal mortality rate                          | 0.0001      | 0.964   | 0.0006            | 0.794   |
| Education spending  | -0.1311     | 0.386   | -0.1139           | 0.290   |
| Education spending squared                                | 0.0195      | 0.197   | 0.0141            | 0.214   |
| Average time to travel to school                          | 0.0055      | 0.865   | -0.0077           | 0.773   |
| Proportion of children that receive school bag            | 0.0225      | 0.004   | 0.0195            | 0.000   |
| Average teachers per school                               | 0.0063      | 0.674   | 0.1085            | 0.000   |
| Average student teacher ratio                             | -0.1402     | 0.007   | -0.0268           | 0.436   |
| Proportion of children attended by school meal programme  | 0.0204      | 0.011   | -0.0037           | 0.477   |

Source: Author's calculations based on INEC household survey LSMS 2001 Nicaragua.

ELASTICITIES FOR ENROLMENT IN EDUCATION, SECONDARY LEVEL, 2001

(Various units)

| Variable  | Logit model |         | Proportions model |         |
|---|-------------|---------|-------------------|---------|
|   | Elasticity  | P value | Elasticity        | P value |
| Sex (1 = Male)  | -0.3707     | 0.004   | 0.6887            | 0.069   |
| Consumption per capita                                    | 0.4269      | 0.000   | 0.0000            | 0.773   |
| Number of members of the household                        | 0.0899      | 0.142   | -0.1979           | 0.459   |
| Average infrastructure in municipality (measured by rent) | 0.1059      | 0.010   | -0.0581           | 0.633   |
| Proportion of population living in urban area             | 0.0240      | 0.799   | 0.1356            | 0.095   |
| Years of study of head of household                       | 0.1903      | 0.000   | 0.1161            | 0.368   |
| Wage premium for primary/secondary education              | 1.5874      | 0.027   | -0.9913           | 0.116   |
| Average municipal mortality rate                          | -0.0046     | 0.474   | 0.0043            | 0.398   |
| Education spending  | 0.5191      | 0.154   | -0.2516           | 0.360   |
| Education spending squared                                | -0.0245     | 0.501   | 0.0406            | 0.163   |
| Average time to travel to school                          | 0.0216      | 0.839   | 0.0051            | 0.968   |
| Average teachers per school                               | -0.0326     | 0.454   | 0.0841            | 0.002   |
| Average student teacher ratio                             | -0.2881     | 0.001   | 0.1123            | 0.272   |

Source: Author's calculations based on INEC household survey LSMS 2001 Nicaragua.

Source: (CEPAL, 2009)

Annex 10. Returns from education per educational level

Anexo 4a. Retornos a la Educación según nivel educativo (MCO)

| Desagregación                   | Salario Principal |             |             |             |             |             |             |              |              | Ingresos del Trabajo |              |              |              |              |              |              |              |              |
|---------------------------------|-------------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|----------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|                                 | 2010              |             |             |             | 2011        |             |             |              | Media        | 2010                 |              |              |              | 2011         |              |              |              | Media        |
|                                 | I                 | II          | III         | IV          | I           | II          | III         | IV           |              | I                    | II           | III          | IV           | I            | II           | III          | IV           |              |
| <b>Nacional</b>                 | <b>7.7%</b>       | <b>7.8%</b> | <b>8.1%</b> | <b>8.8%</b> | <b>8.3%</b> | <b>8.1%</b> | <b>8.3%</b> | <b>8.9%</b>  | <b>8.2%</b>  | <b>8.4%</b>          | <b>8.9%</b>  | <b>9.7%</b>  | <b>10.0%</b> | <b>9.3%</b>  | <b>9.4%</b>  | <b>9.7%</b>  | <b>10.1%</b> | <b>9.4%</b>  |
| <i>Primaria</i>                 | 5.1%              | 5.7%        | 6.7%        | 6.5%        | 6.6%        | 6.4%        | 5.8%        | 6.9%         | <b>6.2%</b>  | 6.1%                 | 7.3%         | 8.9%         | 8.4%         | 8.0%         | 8.4%         | 7.8%         | -0.3%        | <b>7.7%</b>  |
| <i>Técnico</i>                  | 7.8%              | 7.0%        | 7.4%        | 8.2%        | 7.5%        | 7.0%        | 7.3%        | 6.7%         | <b>7.4%</b>  | 8.4%                 | 8.1%         | 9.2%         | 9.3%         | 8.3%         | 7.9%         | 8.3%         | 1.2%         | <b>8.3%</b>  |
| <i>Secundaria</i>               | 9.9%              | 8.8%        | 8.1%        | 10.1%       | 8.3%        | 7.6%        | 8.9%        | 8.0%         | <b>8.7%</b>  | 10.2%                | 9.5%         | 9.2%         | 10.8%        | 8.9%         | 7.7%         | 9.4%         | 5.2%         | <b>9.2%</b>  |
| <i>Superior (Universitario)</i> | 15.5%             | 12.6%       | 12.0%       | 14.5%       | 13.1%       | 12.8%       | 14.6%       | 12.7%        | <b>13.5%</b> | 15.4%                | 12.5%        | 12.1%        | 13.9%        | 13.2%        | 12.4%        | 14.1%        | 20.0%        | <b>13.3%</b> |
| <i>Maestría o Doctorado</i>     | 23.5%             | 25.2%       | 19.0%       | 24.8%       | 17.5%       | 24.2%       | 23.2%       | 28.2%        | <b>23.2%</b> | 23.8%                | 24.8%        | 19.7%        | 25.0%        | 17.0%        | 24.7%        | 22.4%        | 24.0%        | <b>23.2%</b> |
| <b>Hombres</b>                  | <b>8.3%</b>       | <b>8.9%</b> | <b>9.2%</b> | <b>9.8%</b> | <b>8.8%</b> | <b>9.4%</b> | <b>9.5%</b> | <b>10.2%</b> | <b>9.2%</b>  | <b>9.1%</b>          | <b>10.3%</b> | <b>11.2%</b> | <b>11.4%</b> | <b>10.3%</b> | <b>11.0%</b> | <b>11.3%</b> | <b>11.7%</b> | <b>10.8%</b> |
| <i>Primaria</i>                 | 6.0%              | 7.1%        | 7.9%        | 7.5%        | 7.5%        | 8.0%        | 7.3%        | 8.9%         | <b>7.5%</b>  | 7.2%                 | 9.1%         | 10.5%        | 10.1%        | 9.4%         | 10.3%        | 9.8%         | 10.3%        | <b>9.6%</b>  |
| <i>Técnico</i>                  | 8.2%              | 8.4%        | 8.4%        | 9.1%        | 8.4%        | 8.0%        | 8.2%        | 7.2%         | <b>8.2%</b>  | 9.0%                 | 10.0%        | 10.8%        | 10.9%        | 10.1%        | 8.9%         | 9.5%         | 8.7%         | <b>9.7%</b>  |
| <i>Secundaria</i>               | 9.9%              | 9.7%        | 9.2%        | 11.1%       | 9.0%        | 7.6%        | 9.5%        | 6.9%         | <b>9.1%</b>  | 10.3%                | 11.0%        | 11.0%        | 11.9%        | 10.3%        | 8.0%         | 10.2%        | 9.1%         | <b>10.2%</b> |
| <i>Superior (Universitario)</i> | 16.1%             | 13.2%       | 13.1%       | 15.8%       | 13.0%       | 14.5%       | 15.4%       | 13.0%        | <b>14.3%</b> | 16.1%                | 13.1%        | 13.6%        | 14.9%        | 13.9%        | 13.8%        | 15.1%        | 14.0%        | <b>14.3%</b> |
| <i>Maestría o Doctorado</i>     | 21.3%             | 24.6%       | 17.5%       | 26.5%       | 20.0%       | 21.1%       | 21.1%       | 24.6%        | <b>22.1%</b> | 22.2%                | 24.8%        | 19.7%        | 27.7%        | 19.8%        | 21.0%        | 20.5%        | 25.2%        | <b>22.6%</b> |
| <b>Mujeres</b>                  | <b>7.4%</b>       | <b>6.5%</b> | <b>6.8%</b> | <b>7.5%</b> | <b>7.5%</b> | <b>6.6%</b> | <b>6.6%</b> | <b>7.3%</b>  | <b>7.0%</b>  | <b>7.6%</b>          | <b>6.6%</b>  | <b>7.1%</b>  | <b>8.0%</b>  | <b>7.8%</b>  | <b>7.0%</b>  | <b>7.0%</b>  | <b>7.8%</b>  | <b>7.4%</b>  |
| <i>Primaria</i>                 | 4.0%              | 3.3%        | 4.9%        | 5.0%        | 5.2%        | 4.0%        | 3.4%        | 3.8%         | <b>4.2%</b>  | 4.4%                 | 3.5%         | 5.5%         | 5.2%         | 5.4%         | 4.8%         | 4.1%         | 4.5%         | <b>4.7%</b>  |
| <i>Técnico</i>                  | 8.3%              | 5.9%        | 6.7%        | 7.6%        | 6.9%        | 6.4%        | 6.6%        | 6.5%         | <b>6.9%</b>  | 8.5%                 | 6.0%         | 7.1%         | 7.7%         | 6.6%         | 6.6%         | 6.7%         | 6.9%         | <b>7.0%</b>  |
| <i>Secundaria</i>               | 11.4%             | 8.6%        | 7.6%        | 9.6%        | 8.2%        | 8.3%        | 8.8%        | 9.8%         | <b>9.1%</b>  | 11.6%                | 8.6%         | 7.6%         | 10.4%        | 8.2%         | 8.0%         | 8.6%         | 10.1%        | <b>9.1%</b>  |
| <i>Superior (Universitario)</i> | 16.2%             | 13.4%       | 12.1%       | 14.1%       | 14.0%       | 12.5%       | 14.8%       | 13.7%        | <b>13.8%</b> | 16.0%                | 13.6%        | 12.3%        | 14.3%        | 13.9%        | 12.5%        | 14.3%        | 13.9%        | <b>13.8%</b> |
| <i>Maestría o Doctorado</i>     | 25.8%             | 25.3%       | 19.9%       | 22.4%       | 15.2%       | 26.2%       | 25.7%       | 32.6%        | <b>24.1%</b> | 25.6%                | 24.5%        | 19.1%        | 22.4%        | 15.1%        | 28.2%        | 25.3%        | 32.4%        | <b>24.1%</b> |

Annex 11. Education Costs for Households per Educational Level and property of school.

**Anexo 6e. Gasto privado del hogar en educación según nivel y Propiedad del Establecimiento Educativo en córdobas (Año 2010)**

| Items                    | Preescolar    |                 | Primaria        |                 | Secundaria      |                 | Universitario   |                  |
|--------------------------|---------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|
|                          | Público       | Privado         | Público         | Privado         | Público         | Privado         | Público         | Privado          |
| Colegiatura              | -             | 2,218.01        | -               | 2,886.36        | -               | 4,007.32        | -               | 8,289.82         |
| Transporte               | -             | -               | 1,821.08        | 3,380.53        | 1,751.12        | 2,772.64        | 3,123.68        | 3,174.77         |
| Prematricula             | -             | 168.04          | 0.35            | 112.01          | 2.18            | 148.97          | 49.17           | 164.21           |
| Matricula                | -             | 382.42          | 29.19           | 295.25          | 51.06           | 398.96          | 394.44          | 612.38           |
| Uniformes                | 137.90        | 396.90          | 306.31          | 581.33          | 400.23          | 596.53          | 3.32            | 6.45             |
| Art. Educativos          | 122.50        | 175.28          | 190.09          | 411.03          | 296.35          | 502.50          | 473.55          | 478.14           |
| Dinero para el recreo    | 64.14         | 183.32          | 91.01           | 163.67          | 158.73          | 244.63          | 378.77          | 410.48           |
| Dinero para otros gastos | 0.83          | 48.53           | 7.52            | 23.10           | 11.73           | 23.06           | 39.95           | 44.19            |
| Otros gastos             | 7.46          | -               | 17.75           | 54.61           | 31.93           | 53.54           | 66.44           | 60.20            |
| Libros de texto          | -             | 365.19          | 333.08          | 590.19          | 406.69          | 764.77          | 1,203.98        | 1,036.98         |
| <b>Gasto Anual</b>       | <b>332.83</b> | <b>3,937.70</b> | <b>2,796.37</b> | <b>8,498.08</b> | <b>3,110.02</b> | <b>9,512.92</b> | <b>5,733.31</b> | <b>14,277.63</b> |

Fuente: Datos estimados de la EMNV 2009 corregidos por la inflación acumulada en 2010.

Source: (FUNIDES, 2013)

