

# The Determinants of Economic Growth in the Northern Triangle from Central America: Preliminary Empirical Evidence

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## Abstract

*This paper applies the foundations of economic growth theory to identify key macroeconomic determinants leading the economic growth in Guatemala, El Salvador and Honduras. These three countries are known as the Central America's Northern Triangle. The motivation relies on the context of the implementation of the Plan for the Alliance of the Prosperity of the Northern Triangle due to the migratory crisis of child unaccompanied by parents that were found illegally in the board of the United States. The main findings suggest that population is the main driver of economic growth. This means that loss of human capital represents a huge loss of potential increase in economic growth. In addition, capital formation, openness of the economy, government expenditure and domestic savings were found as significant and huge determinants on economic growth.*

## Introduction

The study of determinants of economic growth has been widely applied throughout different context across groups of countries or regions since the past century. The motivation relies in the efforts to seek effective ways to create greater levels of welfare for the society in terms of economic growth. Policy makers and key actors from different sectors of the society try to identify the priority areas of development for which it should be addressed investment plans that pursue economic growth through its drivers. With that in mind, the motivation of this paper arises in the social con-

text of a human capital loss that Guatemala, El Salvador, Honduras, known as the countries of the Northern Triangle from Central America, have been facing since the overall beginning of the civil war on this countries in the 1970.<sup>1</sup>

The loss of human capital have been associated, most likely, to the migration movements of citizens from this countries to the countries of North America (particularly United States). This people, who have migrated from the Northern Triangle, have made their decisions because of the lack of opportunities of prosperity and the low conditions of social and environmental security that Guatemala, El Salvador and Honduras face. The concern behind the loss of human capital achieved a critical point in 2014 when it occurred a migratory crisis given by the fact that around 50,000 children were found illegally and without parents in the boards of the United States.<sup>2</sup> In re-

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<sup>1</sup> Orozco, Manual, and Julia Yansura. Understanding Central American Migration. Inter-American Dialogue, 2014.

<sup>2</sup> U.S. Customs and Border Protection. "Southwest Border Unaccompanied Alien Children Statistics FY 2016." 2015. <http://www.cbp.gov/newsroom/stats/southwest-border-unaccompanied-child>

sponse to that, since 2016 the government of each of the countries of the Northern Triangle, in common agreement with the Inter-American Development Bank (IDB), will implement the development plan known as *the Plan for the Alliance of the Prosperity of the Northern Triangle*, whose objective is to implement opportunities of prosperity that avoid migration movements from citizens from the countries that are part of the Northern Triangle.<sup>3</sup>

Regarding of the context explained before, the purpose of this paper seek to answer the following two questions. Firstly, what are the determinants of economic growth of the countries of the Northern Triangle? This question means a particular interest for the policy makers who will take charge of the coordination, implementation, monitoring, and evaluation of the *Plan for the Alliance of the Prosperity of the Northern Triangle*. As economic growth must be generated in order to pursue the opportunities of prosperity that are part of the goal of the development plan, this paper seek to provide to politicians, businessmen, academics and activist an insight of the macroeconomic drivers that have lead economic growth, historically and specifically in the countries of the Northern Triangle. Derived from the first question, the second question that this paper seek to answer is what could it be the potential economic value that an additional citizen added to his or her country of origin if he or she decided not to migrate? This second questions pretend to keep in mind a constant reflection about how much the economy could gain if the loss of human capital were incorporated constantly active in the economy.

## Literature Review

As the topic covered for this paper is regarding of the economic determinants of the countries of the Northern Triangle from Central America, it was considered to divide the litera-

dren/fy-2016 (accessed December 2015).

<sup>3</sup> Inter-American Development Bank. "Plan of the Alliance for Prosperity in the Northern Triangle: A Road Map." Regional Plan, 2014. Pp. 1-2.

ture review into three sections. The first section seek to review the theoretical foundations of economic growth, such general approaches that some authors have given throughout the recent years in order to explain the dynamic under which countries experiment growth in their economies. The second section points out the approach given to the key role of the human capital in economic growth as this particular aspect is related to the concern of the loss of human capital in the countries of the region mentioned before. Finally, the third section includes a review of the empirical results regarding of the determinants that pursue the economic growth in countries around the world.

## Theoretical Foundations of Economic Growth

The theory regarding of economic growth is not new, but it has been wider since the past century. As the world have faced global challenges,<sup>4</sup> it has been arising the formulation of theories that explain the key factors that can explain the way of how countries experiment economic growth. In this sense, the importance of studying economic growth relies on its notion to be related to the economic performance as well as to the welfare of residents of countries.<sup>5</sup> Related to the same sense, Zhuang and Juliana (2010) pointed out that "a sustainable economic growth is essential for a country's long-term development and stability".<sup>6</sup>

<sup>4</sup> During the century XX, the world faced most of the critical events that represented huge losses in terms of physical and human capital. Among this event, it can be mentioned: The Great Depression of 1929, the First and Second World War, the Cold War, economic crisis of public debt and oil prices, among others.

<sup>5</sup> Hong Zhuangand and Robert St. Juliana. "Determinants of Economic Growth: Evidence from American Countries." *International Business & Economics Research Journal* 9, no. 5 (2010): 65.

<sup>6</sup> Zhuangand and Juliana, "Determinants of Economic Growth: Evidence from American Countries." 65.

The theories on economic growth has been updating according to main drivers presented under economic, social, political, cultural, environmental, among others, contexts. Looking into the main formulations arisen during the late of the past century, it can be found an initial group of “endogenous growth” theories that sought to explain that economic growth was driven by government policies, among other aspects. Regarding of that, Robert Barro (1996), based on a review of the research done by Paul Romer, Robert Lucas and Sergio Rebelo, pointed out that this models “... were standard except that capital was broadened to include human components and to allow for spillover effects”.<sup>7</sup> This observation made from this group of theories introduced the importance of human capital on economic growth that it was be described in the next section. Later on theory of economic growth, the component of technology was added to explain its impact on economic growth. According to a review of research on this topic done by Paul Romer among other authors, Robert Barro (1996) emphasized that the importance given to technology as a driver of economic growth relies on its meaning as “the discovery of new ideas was the only way to avoid diminishing returns in the long run”.<sup>8</sup> Related to the impact of technology on economic growth, Paul Romer (1990) find that “growth is driven by technological change that arises from intentional investment decisions made by profit-maximizing agents”.<sup>9</sup> However, as Robert Barro says, the precise fact to direct attention in technology is whether or not the arisen innovations are new. Technology effects may mean a paradox in the way of how reproduce effects on the dynamism of economy. The paradox

<sup>7</sup> Robert Barro. *Determinants of Economic Growth: A Cross-Country Empirical Study*. (Cambridge: National Bureau of Economic Research, 1996), 1.

<sup>8</sup> Robert Barro. *Determinants of Economic Growth*, 1.

<sup>9</sup> Paul Romer. “Endogenous Technological Change.” *Journal of Political Economy* (The University of Chicago) 98, no. 5 (1990): 71.

arises, as William Nordhaus (1969) indicated, in the sense that technology materialized by legal instruments through patents mean a trade-off between the social benefits from stronger incentives for invention and losses in consumer welfare as a result of monopoly pricing.<sup>10</sup>

Despite the contribution of the previously mentioned theories in studies about economic growth, the recent empirical work on economic growth across countries and regions has been based on the neoclassical model. In this sense, according to Robert Barro (1996) “the standard applied framework derives more from the older, neoclassical model, as extended to incorporate government policies (including institutional choices that maintain property rights and free markets), accumulation of human capital, fertility decisions, and the diffusion of technology”.<sup>11</sup>

From the neoclassical model, Robert Barro (1996) highlighted the idea of conditional convergence that has been congruent with findings from empirical analysis. Regarding of this, the general notion was that “poorer countries grow faster per capita once one holds constant measures of government policy, initial levels of human capital, and so on”.<sup>12</sup> Furthermore, related to the neoclassical theory of economic growth, Robert Lucas (1988) pointed out that “... countries with the same preferences and technology will converge to identical levels of income and asymptotic rates of growth”.<sup>13</sup> The observation made by Robert Lucas sought to answer the question of whether or not people and capital are free to move, which leded the

<sup>10</sup> William D Nordhaus. “An Economic Theory of Technological Change.” *The American Economic Review* (American Economic Association) 59, no. 2 (1969), quoted in Petra Moser. “Patents and Innovation: Evidence from Economic History.” *Journal of Economic Perspectives* (American Economic Association) 27 (2013): 1.

<sup>11</sup> Robert Barro. *Determinants of Economic Growth*, 1.

<sup>12</sup> Ibid, 1.

<sup>13</sup> Robert Lucas. “On the Mechanics of Economic Development.” *Journal of Monetary Economics* (University of Chicago) 22, no. 1 (1988): 14.

assumption of factor mobility among countries. The sense of the convergence property from the neoclassical model of economic growth is important to be understood in the context of labor mobility among countries, which indeed explains the economic dynamic behind the migrations movements that takes place from developing countries to developed countries. Such dynamic of migration occurs when, for example, developed countries have accumulated high levels of capital that present a demand of labor force from developing countries to increase the productivity of such capital. The notion behind of that relies on the marginal product of labor that was hugely explored by Robert Solow (1956) in order to explain the dynamic of the interaction among capital and labor factors on economic growth.<sup>14</sup>

### The role of Human Capital on Economic Growth

As the context of this paper is based on a critical social concern of the migration movements from the countries of the Northern Triangle of Central America to United States, it arises the research motivation to understand the economic value of human capital. Theory on economic growth has addressed importance to understand the interaction of human capital in the accumulation process of capital that initially were formulated for the case of physical goods. In that sense, Robert Barro (1996), from a reference of research done by authors who contributed to the formulation of the neoclassical model (Robert Lucas (1988), Sergio Rebelo (1991), among others), pointed out that “the concept of capital in the neoclassical model can be usefully broadened from physical goods to include human capital in the forms of education, experience and health”.<sup>15</sup>

<sup>14</sup> Robert M. Solow. “A Contribution to the Theory of Economic Growth.” *The Quarterly Journal of Economics* (The MIT Press) 70, no. 1 (1956): 91-92.

<sup>15</sup> Robert Barro. *Determinants of Economic Growth: A Cross-Country Empirical Study*. (Cambridge: National Bureau of Economic Research, 1996), 5.

The interaction between physical and human capital is a key factor to understand the dynamic under which countries reach the property of convergence mentioned in the section before. Regarding of this, Robert Barro (1996) emphasized that “The economy tends toward a steady-state of human to physical capital, but the ratio may depart from its long-run value in an initial state”.<sup>16</sup>

The effect of human capital on economic growth was receiving a higher importance on the formulation of theory as it was arising the research motivation to understand the economic impact of time allocation of people. Initially, from the economic model formulated by Solow, it was understood that the labor force lead economic growth by the fact that people is hired in economic activities that drive the increase in production. However, later it was formulated the theory of human capital that brought out the following idea as Robert Lucas (1988) stated: “The theory of human capital focuses on the fact that the way an individual allocated his time over various activities in the current period affects his productivity, or his  $h(t)$  level, in the future periods  $h(t)$  mean the representation of human capital”.<sup>17</sup> The formulation from Robert Lucas (1988) allow to understand the accumulation process of human capital as it occurs for the case of the capital represented by the creation of physical goods. To see a way of how the human capital interacts into the economy, Paul Romer (1990) laid out that human capital is used in three sectors under which the economy was classified in the formal model. Firstly, there is a research sector that combines human capital with the existing level of knowledge to produce new knowledge. Secondly, it takes place an intermediate-goods sector, which based on the designs from the research sector and forgone output, produce the large number of

<sup>16</sup> Robert Barro. *Determinants of Economic Growth: A Cross-Country Empirical Stud*, 5.

<sup>17</sup> Robert Lucas. “On the Mechanics of Economic Development.” *Journal of Monetary Economics* (University of Chicago) 22, no. 1 (1988): 17.

goods that will be available for use in final-goods production. Finally, a final-goods sector uses labor, human capital, and the set of goods to produce final output that can be consumed or saved as new capital.<sup>18</sup>

Another foundation of the importance of human capital on economic growth is related to the facts that present the difference in earnings among groups of population. This idea came as part of the formulation of the theory of human capital, whose one of its main contributors was Theodore Schultz. In order to understand the human capital regarding of the differences on earnings between groups of population, Theodore Shultz (1961) wanted to explain, for example, why farm people who take nonfarm jobs earn less than industrial workers of the same race, age, and sex. In addition to that, the reason of why urban males earn much less than white males.<sup>19</sup> From his observations, Theodore Schultz (1961) pointed out that “The large differences in earnings seem rather to reflect mainly the differences in health and education”. To justify this, Schultz (1961) found that across geographical regions, workers, who have less education, show the less level of earnings, on average.<sup>20</sup>

For the context of migration that concerns for the present paper, Theodore Shultez (1961) found that farmers, who migrated from developing regions, earn very little in comparison with the region of destiny due to lower aspects in terms of schooling, health, acquired skills, and therefore, they relatively have little ability to do useful work.<sup>21</sup> In that sense, for the case of the countries from the Northern Triangle of Central America, it has been showed that migrants from such countries who reside in United States represent a huge contribution

<sup>18</sup> Paul Romer. “Endogenous Technological Change.” *Journal of Political Economy* (The University of Chicago) 98, no. 5 (1990): 79.

<sup>19</sup> Theodore Schultz. “Investment in Human Capital.” *The American Economic Review* (American Economic Association) 51, no. 1 (1961): 4.

<sup>20</sup> Theodore Schultz. “Investment in Human Capital.” 5.

<sup>21</sup> *Ibid*, 5.

to the economy of their countries of origin. According to data obtained from the World Bank Group, in average, migrants in US who came from the countries of the Northern Triangle send to their family remittances which has been represented the 13.6 percent of the Gross Domestic Product (GDP) of such countries from 2000 to 2014. This relative value with respect to the GDP is higher in comparison with the other countries of the Central America, where contribution of remittances on GDP has been of 3.8 percent. Thus, for Northern Triangle countries, migrant’s earnings represent an important contribution for the economy of their countries of origin. However, most of the time, as the research of Theodore Schultz (1961) highlighted, migrants use to be older with lower level of education. So that, if young person prefer to migrate, they are likely to acquire the characteristics observed for older person. From this aspect, it takes importance the role of investment in education and health which, as Lucas (1988) indicates, it should be address with special priority for children and youth as they take a better advantage of the returns expected from the accumulation of human capital. Regarding of this, Lucas (1988) pointed out that “people accumulate it rapidly early in life, then less rapidly, then not at all – as though each additional percentage increment were harder to gain than the preceding one”.<sup>22</sup> The notion that Lucas (1988) wanted to highlight is that the lifetime of an individual is finite to the return of his or her increments in falls with time.

### **Empirical Evidence of Determinants of Economic Growth**

This section includes the references of a research regarding of empirical evidence of drivers that lead economic growth for a given selection of a sample of countries during certain period of times. The following reference was included in order to have a basic foundation

<sup>22</sup> Robert Lucas. “On the Mechanics of Economic Development.” *Journal of Monetary Economics* (University of Chicago) 22, no. 1 (1988): 19.

for the selection of variables and period that were concerning for the present paper.

Robert Barro (1996) did an important research regarding of determinants of economic growth. In his study *Determinants of Economic Growth: A Cross-Country Empirical Study*, Barro (1996) run regressions applied to a panel of 100 countries for a period from 1960 to 1990 within which he used subsamples over three period 1965 – 1975, 1975 – 1985 and 1985 – 1990.<sup>23</sup> The purpose of his empirical research was to prove the effects on economic growth from a selection of variables included that was correspondent to a formulation of three essays that he did:<sup>24</sup>

The first essay consisted in explain the idea of conditional convergence as a derivation from the extended version of the neoclassical growth models. Regarding of this essay, Robert Barro (1996) found that “For a given starting level of real per capita GDP, the growth rate is enhanced by higher initial schooling and life expectancy, lower fertility, lower government, consumption, better maintenance of the rule of law, lower inflation, and improvements in the terms of trade”.<sup>25</sup>

For the second essay, Robert Barro (1996) sought to explain “the interplay between economic development and a measure of political freedom or democracy”.<sup>26</sup> Regarding of this proposition, Robert Barro (1996) found that an economic growth is leaded by democracy if its amount has not reached a moderate level. Or by the contrary, as Barro (1996) pointed out “in places that have already achieved some political rights, further democratization may retard growth because of the heightened concern with social programs and income redistribution”.<sup>27</sup>

<sup>23</sup> Robert Barro. *Determinants of Economic Growth: A Cross-Country Empirical Study*. (Cambridge: National Bureau of Economic Research, 1996), 12.

<sup>24</sup> Robert Barro. *Determinants of Economic Growth: A Cross-Country Empirical Study*, 2-3.

<sup>25</sup> Ibid, 2.

<sup>26</sup> Ibid, 2.

<sup>27</sup> Ibid, 2-3.

The third essay highlighted the link between inflation given by monetary policy and economic growth. For this case, Robert Barro (1996) emphasized that “higher inflation goes with a lower rate of economic growth”.<sup>28</sup>

#### Data Selection

In order to understand the determinants that may have predictable power to the economic growth of the region of Northern Triangle from Central America, it was constructed an econometric model that included some of the variables based in the research done by Robert Barro (1996). Regarding of the model that will be explained further, the data for the included variables was obtained from the World Development Indicators database of the World Bank Group. The series correspond to the countries of Guatemala, El Salvador and Honduras for the period from 1960 – 2014. So that, the model that was specified is described with formula where GDP Growth is the growth rate of the Gross Domestic Product (GDP), Washcon is a dummy variable that is equal to 1 for the years included during the period 1990 to 2014,<sup>29</sup> Cap is the growth rate of the gross fixed capital formation, Gov is the growth rate of the General Government Final Consumption Expenditure, Inf is the inflation rate measured by the annual rate on the consumer prices index, Open is the growth rate of the sum of exports and imports, Terms is the terms on trade measure by the ratio between exports and imports, Pop is the growth rate of population, Seccon is the gross school enrollment in the secondary level of education mea-

<sup>28</sup> Ibid, 3.

<sup>29</sup> The rationality to include this period relies on the Washington Consensus implementation period that took place since 1990. The Washington Consensus consisted in a set of 10 policies seek to apply in Latin American & the Caribbean regarding of measures to pursue economic development through monetary, fiscal, commercial and competence policies. For further information, see: Williamson, John. “A Short History of the Washington Consensus.” *Law and Business Review of the Americas* (International Law Review Association) 15, no. 2 (2009): 9-10.

sured by the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the secondary level, Rem is the growth rate of remittances received by resident households to or from non-resident households, Sav is the growth rate of the gross domestic savings, Rule is the rule of law index<sup>30</sup>.

## Results from the Econometric Model

The following section presents the result displayed by the model specified in the previous section. It is important to note that it was run three regression. The first one correspond to the period from 1960 to 2014. Then, as the dummy variable included for the period during which the Washington Consensus took place resulted statistically significant at 10% level, it was considered to observe whether or not the determinants of economic growth changed among the period from 1960 to 1989 and the period from 1990 to 2014. Thus, the results of the regressions are presented in table 1.

Based on the results that showed the previous table, the following observations that were identified are described as follows:

In general, it is observed an acceptable fit for the model if it is looked that the R-squared

<sup>30</sup> This is an indicator as part of the database of World Wide Governance Indicators developed by the World Bank Group. Daniel Kaufmann, Aart Kraay and Massimo Mastruzzi (2010) laid out the creation of this index as follows: "Rule of Law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5". For further information see, Kaufmann, Daniel and Kraay, Aart and Mastruzzi, Massimo, The World-wide Governance Indicators: Methodology and Analytical Issues (September 2010). World Bank Policy Research Working Paper No. 5430. Available at SSRN: <http://ssrn.com/abstract=1682130>

NORTHERN TRIANGLE: Determinants of the Growth of the Gross Domestic Product (GDP)			
Variable	(1960 – 2014) (1)	(1960 – 1989) (2)	(1990 – 2014) (3)
C	-1.319 (0.908)	-3.166* (1.746)	2.113* (1.157)
Dummy (1 = Washcon)	0.901** (0.418)		
Cap	0.063*** (0.015)	0.058*** (0.022)	0.071*** (0.018)
Gov	0.075*** (0.026)	0.114*** (0.040)	0.034 (0.026)
Inf	-0.031 (0.023)	0.001 (0.043)	0.044 (0.031)
Open	0.207*** (0.022)	0.225*** (0.031)	0.122*** (0.026)
Terms	0.012 (0.009)	0.010 (0.010)	-0.019 (0.016)
Pop	0.880*** (0.270)	1.446** (0.602)	0.501* (0.273)
Secon	0.005 (0.008)	0.003 (0.019)	0.001 (0.007)
Sav <sup>a/</sup>	-0.001 (0.007)	0.067*** (0.022)	-0.004 (0.005)
Rule			-0.747* (0.436)
Observations	165	90	75
R-squared	0.621	0.710	0.628
Adjusted R-squared	0.599	0.682	0.577
S.E. of regression	2.029	2.214	1.334
Sum squared resid	638.259	396.867	115.676
F-statistic	28.245	24.830	12.197
Prob(F-statistic)	0.000	0.000	0.000
Durbin-Watson stat	1.531	1.399	2.090
Notes: Standard Errors in parenthesis, *** statistical significant at 1%, ** statistical significance at 5%, * statistical significance at 10%, <sup>a/</sup> values of the variable Sav were not available for El Salvador and for the period from 1960 to 1989 for Guatemala. Source: Author based on World Development Indicators (2015)			

obtained for the period from 1960 to 2014 was of 0.621. The general result shows congruence with the theoretical foundations included in the previous sections. However, it is important to note that across the sub periods, the fit of the model reduces. So that, the theoretical foundations were more likely applied for the period from 1960 to 1989 rather than the period from 1990 to 2014.

For the period 1960 to 2014, the coefficients of capital formation, government expenditure, openness of the economy (sum of imports and exports), and population were statistically significant. In general, the statistical significance of such variables belongs across the subsamples. Though, in addition to such variables, it is important to note that the coefficient of savings was statistically significant for the sub period from 1960 to 1989. However, the coefficients of savings and government expenditure did not result statistically significant for the sub period from 1990 to 2014.

## Discussion of Results

In general, it is observed that during the period from 1960 to 2014, the economic growth of the countries of the Northern Triangle from Central America was driven mainly by the population, the openness of the economy, the government expenditure and the capital formation if it is observed the magnitude of the coefficients correspondent for each value. For the sub period from 1960 to 1989, it is observed, in addition, that the gross domestic savings were a key determinant of economic growth. In contrast, for the 1990 to 2014, the magnitude of the growth rate on savings does not belong anymore as an effect on economic growth and its coefficient is not statistical significant as well. The impact that savings had only during the period from 1960 to 1989 could lead to accumulate such level of stock that meant higher investment level toward the next period from 1990 to 2014, as the economic growth during this period was driven by a higher magnitude of the capital formation. Thus, savings from 1960 to 1989 represented

a positive effective on the process of capital formation and therefore, as an indirect channel, on economic growth. Regarding with this observation, Robert Solow (1956) pointed out that “growth in the capital stock was inevitable because the savings ratio was taken as an absolute constant”.<sup>31</sup>

The population growth resulted as the main driver of economic growth for the countries from the Northern Triangle. In the context of loss of human capital due to the migration movements that have taken place from such countries, it is important to consider the potential contribution that people can represent on economic activities in their countries of origin. Although the magnitude of the coefficient of population growth showed a reduction from the period 1960 – 1989 to the period 1990 to 2014, the magnitude for the recent period is still significantly high. The magnitude of the coefficient suggests that, annually in average, per every one percentage point in which the population growth reduces, the economic growth would be, potentially, reduced by 0.501 percentage points, given that all the other factors that may have incidence on economic growth remain constant. Such coefficient is useful to understand the potential gain in economic growth that countries of the Northern Triangle would have if they implemented policies that pursue to their citizens to be constant and highly productive in their economy. If we take into account that the stock of migrants from the countries of the Northern Triangle represents 9 percent of the population and that stock increases, in average, at 1.55 percent annually, then, this proportion represents a partial reduction of 0.14 percentage points in the population growth rate. Thus, if we use the coefficient of the partial relationship between the population growth and economic growth, then, the impact is that the economy from the countries of the Northern Triangle loss a potential increase in 0.07 percentage points de-

<sup>31</sup> Solow, Robert M. “A Contribution to the Theory of Economic Growth.” *The Quarterly Journal of Economics* (The MIT Press) 70, no. 1 (1956): 87.

rived from the annual increase in the stock of migrants who decide to abandon their countries of origin.

Across the two sub periods, it is important to note changes observed in the magnitude of the coefficients of government expenditure, openness of the economy and terms of trade. Regarding of government expenditure, it is observed a positive partial relation with economic growth. This means that the government plays a crucial role for the economy in providing a well operation of public services in education, health, infrastructure, citizen security, resilience against climate change and hunger, among others. The intuition behind is that countries of the Northern Triangle have a small government as they are developing countries. For example, according with data from the World Bank Group, Guatemala, after Nicaragua, was the country with the smallest ratio on the government expenditure to the GDP in Latin America & the Caribbean region. Otherwise, the coefficient of government expenditure would have been negative as the results that Robert Barro (1996) obtained. Though, the coefficient of government expenditure did not belong statistically significant toward the period from 1990 to 2014.

In another hand, it was observed that the openness of the economy has meant a significant partial effect on economic growth. Such impact was appreciated with a greater magnitude during the period from 1960 to 1989. However, the expectation might be that a wider open economy had a higher impact on the growth of the economy, particularly for the countries from the Northern Triangle, after the policies implemented as part of the Washington Consensus. The reason to achieve a higher economic impact relies on the term of trade. As Robert Barro (1996) emphasized “changes in the terms of trade have often been stressed as important influences on developing countries, which typically specialize their exports in a few primary products”.<sup>32</sup> With this

<sup>32</sup> Barro, Robert. *Determinants of Economic Growth: A Cross-Country Empirical Study*. Cam-

bridge: National Bureau of Economic Research, 1996. 20.

in consideration, it is observed that the effect on economic growth driven by terms of trade changed from positive to negative across the two sub periods. During the period from 1990 to 2014, as part of the policies of the Washington Consensus,<sup>33</sup> the countries of the Northern Triangle achieved important bilateral commercial agreements in order to pursue higher free trade conditions with their main commercial partners, which the main of them is United States. As a result, the trade balances of this countries has showed an increasing importance of the imports over exports and, therefore, a reduction on the terms of trade. Thus, the coefficient of terms of trade suggests that imports lead economic growth during the period from 1990 to 2014. However, the literature review suggest that economic policy strategies may address a higher importance of higher-added-value exports promotion as its effect on the economy is appreciated in terms of employment, output, income and consumption.

## Conclusions

The loss of human capital through migration movements have represented a significant loss of potential gain in economic growth that countries of the Northern Triangle would have experimented. Particularly, within the context of the migration movements that have been taken place from 1960 to 2014, the concern of loss of human capital may be higher if it is taken into account that population growth has been clearly the main driver of economic growth. Although the magnitude in which population growth affects economic growth decreased from the period 1960 – 1989 to the period 1990 – 2014, the level of the magnitude is significantly and hugely high. In that

bridge: National Bureau of Economic Research, 1996. 20.

<sup>33</sup> Williamson, John. “A Short History of the Washington Consensus.” *Law and Business Review of the Americas (International Law Review Association)* 15, no. 2 (2009): 9-10.

sense, from the period 1990 – 2014, the countries from the Northern Triangle has lost, on average, a potential annual increase of 0.07 percentage points in economic growth rate because of the persons who have decided to migrate outside of their countries of origin in every year.

In addition to the population growth, it was found that domestic savings, capital formation, the openness of the economy and government expenditure have been significant determinants of economic growth. Domestic savings were an important driver with a huge and statistically significant magnitude during the period from 1960 to 1989. This may lead that the incidence of capital formation on the economy increased from the period 1960 – 1989 to the period 1990 – 2014. In another hand, in spite that the countries of the Northern Triangle have been exposed to the policies on international trade and fiscal policy as part of the Washington Consensus implemented since 1990, it was found a reduction in the incidence of the government expenditure and the openness of the economy on economic growth from the first period to the second period. In terms of fiscal policy, it is important that this countries find strategic ways to increase the level of government expenditure as they are still developing countries whose one of their conditions has been to have a small government. In this journey, government expenditure should be increases with prudence relatively to the sustainability of debt and with effectiveness in the coverage of public services that lead a stronger economic contribution of the human capital. Regarding of the openness of the economy, it was found that the reduction of the terms of trade across the countries of the Northern Triangle has meant losses in potential increases of economic growth driven by exports. Hence, such countries need to pursue commercial policies that increase the promotion of higher-value-added exports in goods and services that seek to entry to new segments of markets.

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