Free Trade Agreements and their Impact on the Economic Growth of Developing Countries

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Abstract

The approval of the Free Trade Agreement between the U.S. and Colombia means the final entry of the Colombian economy to the economic model of globalized markets. The application of this economic paradigm aims to extend the frontier of consumption of individuals involved in the process of trade, which results in an increase in Gross Domestic Product (GDP), a reduction in the prices of goods and services and a rise in the living standards of the population. This view only takes into account GDP growth as an indicator of the increase in wealth of an economy. This indicator and its derivative GDPpercapitado not ensure an adequate distribution of wealth. Thus, these bilateral trade agreements are justified as a strategy for long-term economic growth. Consistent with the above and using the results from eighteen years of the North American Free Trade Agreement, we will evaluate the impact of Mexican GDP growth and if this is sufficient to fulfill the principles of a neoclassical convergence growth model.

Keywords: Free Trade Agreements, Economic Growth, Convergence, Steady State, Final Aggregate Demand

1. Proposed Model of Economic Growth

Within 'The Economic Environment of Organizations' research group at EAN University, a growth model is being developed.

Starting with the review of concepts and theoretical advances and then the collection of available statistics on the variables mentioned above. This will then begin to show the key determinants of growth. It is considered that GDP per Capitais used to assess almost every economy in the world and that it is a good, available approximation for the development of different economies. This, however, depends on synthesis, the competitiveness of economies including the management of the macroeconomic variables and organizations, the general living conditions of the population, which in turn depend on the level of income and its distribution (Gini) and the proper functioning of institutions.

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Under these conditions the basic equation of the model is defined as follows:

(1)GDP per Capita = f (Com, Level, Inst)

Where:

Com = Economic Competitiveness
Level = General Living Conditions of the Population
Inst = Operation of Institutions

From a theoretical standpoint, the competitiveness of economies, should in fact, be measured by the fraction of the market that each possesses. However, there is no real measure of what market share each economy holds, which would require being able to build a proxy variable with the value of each country's exports being divided by the value of world trade. This index is statistically flawed within the variable, as are the changes it intends to explain. For this reason, it is better to use the Global Competitiveness Index(GCI) which has been continually displayed as an independent, composite indicator of GDP per Capita, and which measures the competitiveness of economies reasonably well.

The living conditions of a population can be measured by the Human Development Index, which also includes within its components GDP per Capita. Therefore, we decided to use Life Expectancy at Birth (LEAB)as a variable to measure Human Development as it explains quite well, the general living conditions of the population and because it complements the UN Education Index. Education levels are an excellent complement to theLEAB and the GCI, making three conceptually strong packages explaining not only human development, but also the development of macroeconomic management and organization of various countries.

Finally, as a proxy variable for the functioning of institutions and the associated transaction costs, the Corruption Perceptions Index (CPI), developed by Transparency International was included. Thus, the basic equation is transformed into statistical terms, as:

(2) GDP per Capita = f (GCI, LEAB, EDU, CPI)
(3) = α + β_0 GDP per Capita GCI + LEAB + β_1 β_2 + β_3 CPI EDU

where:

GDP per Capita: GDP per Capita
GCI: Global Competitiveness Index
LEAB: Life Expectancy at Birth
EDU: Education Index of United Nations
CPI: Corruption Perceptions Index
α, β_0: The Respective Coefficients

An explanation of the meaning of each variable is included:

1. The Global Competitiveness Index (GCI) - An additional index of GDP per Capita used in the analysis of comparative development is the index developed by the World Economic Forum (WEF). It takes into account five variables that measure the economic environment, the management of macro variables as well as a country's management of their organizations. This index contains elements such as inflation, the level of higher education and training, business competitiveness, the sophistication of corporate operations and their strategic direction and the quality of the national business environment.
2. To avoid statistical problems, correlation with the variable GDP per Capita index was used to dis-aggregate the Human Development Index (HDI), taking the life expectancy and education index independently and excluding GDP per Capita
3. The functioning of institutions and associated transaction costs - Regarding the functioning of institutions; quantitative indicators that directly measure the functioning of institutions and the associated costs related to the efficiency or inefficiency of the functioning of the organization do not exist.

The Corruption Perceptions Index, developed by Transparency International ismeasuredby the subjective assessment of respondents in representative samples of the society about the perceived extent of corruption by public institutionsand the fulfilment of contracts in the respective economy. This indicator is a proxy variable in the effect that transaction costs can have on economic growth.

Based on the above assumption, we made a regression from a double-log model to represent the relevant elasticities, leaving the equation as follows[1]:

(4)[5] Log (GDP per Capita) = -5.639 + 2.159 GCI + 2.184 LEAB + 0.557 EDU + 1.586 CPI

It should be noted that the coefficients are expressed in terms of elasticity.

2. Evolution of the Determinants of growth in Mexico 1994 - 2011

According to the above and based on the work done in the 'Economic Environment' research group at EAN University, we evaluated the evolution of determinants during the period in which Mexico became a part of NAFTA. For this purpose we constructed a sample group of countries, representing 69.3%[2]of the population of Latin America. The selected countries include Brazil, Chile, Colombia, Peru and Mexico. According to ECLAC at June 2011 the total population of Latin America was 583.6 million. The five countries which make up part of the sample group represent 404.4 million people. Figure 1 shows the population distribution by country in the region.

**Diagram 1: Latin America: Participation of the Population**

Source: ECLAC
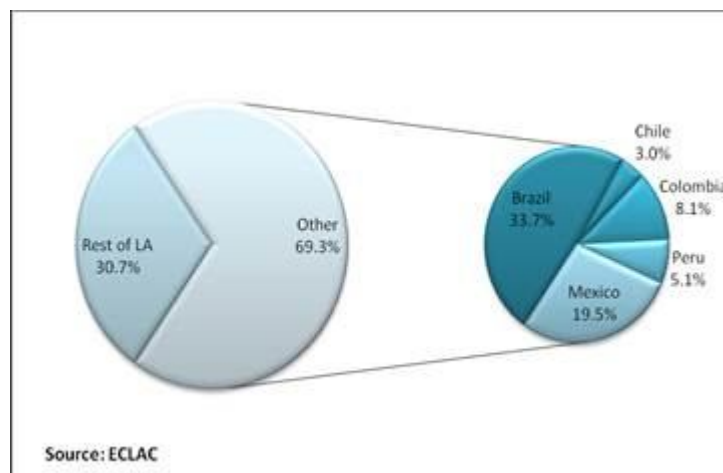
To assess each of the six determinants we took the total population of the five countries used in the sample group and estimated their participation. On top of this value we weighted in the contribution of each factor and estimated the average of the five countries. This value was then compared to Mexico's indicator.

2.1Evolution of GDP per Capita

In the 15 years since 1994, from the first year of NAFTA until 2009, which relates to the most recent available information in the World Bank's data base, the annualized rate of change in GDP per capita for the five countries was 1.49 %, from $8,129 USD in 1994 to about $10,152 USD in 2009. In the same period the GDP of Mexico had a variation of 1.48% per year, from $9,968 USD to $12,429 USD, deflated by the Purchasing Power Parity (PPP) base in 2005.

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[5] This model is significant at any level indicating that, overall, the four indices explain very well the GDP per Capita for 135 countries, with an R2 of 0.717, an F of 82.16 and the appropriate standard errors.

Diagram 2: Change in GDP per Capita 1994 – 2009

Source: World Bank. PPP US$ in 2005
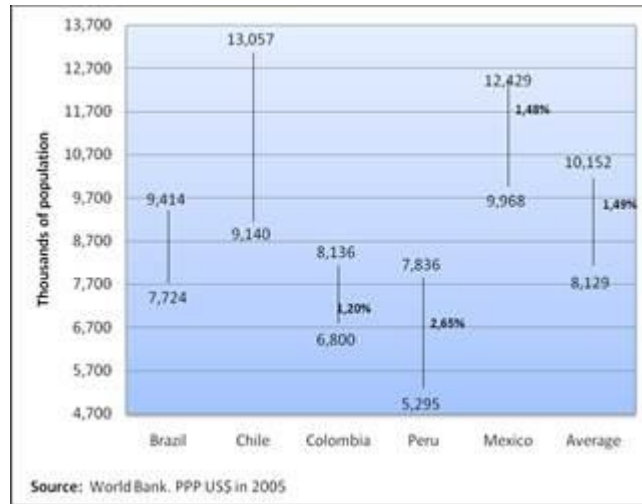
It should be noted that in 1994, Chilehad a lower per capita income of $828 USD compared to Mexico. By 2009 they exceededthe average income of every Mexican by nearly $600 USD. The only other country for the period that shows an annualized change in GDP per capita is Peru which grew by 2.65%.
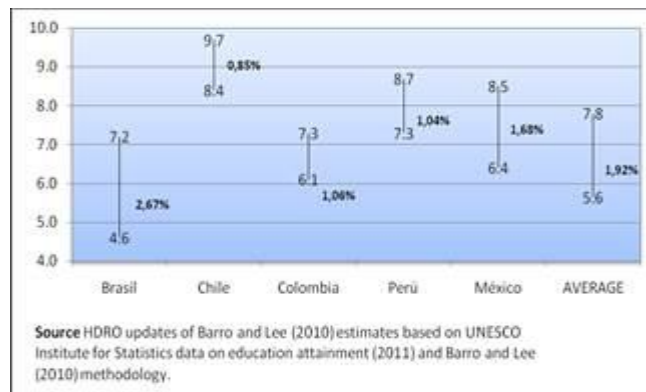
While not conclusive, it may be noted that the growth figures in GDP per capita at purchasing power parity show that three countries with FTAs in force with the United States have a higher annualized change in GDP per capita than countries like Brazil and Colombia who do not have an FTA with the USA.This is especially true for Peru. The country with the lowest income in 1994 and in 2009 was equal with Colombia.

2.2Years of Education

According to the United Nations definition, years of education is the time that people over 25 remain in the education system

As shown in Figure No. 3, the average years of education received improved in the five countries in the sample group analyzed. From an average of 5.6 years in 1994 to about 7.8 years in 2011, i.e. a change of 1.92% annualized.

Diagram 3: Effective Years of Education

Source HDRO updates of Barro and Lee (2010) estimates based on UNESCO Institute for Statistics data on education attainment (2011) and Barro and Lee (2010) methodology.

This determinant also contains countries without an FTA with the USA, those which fall behind. In 2011, Brazilians over 25 stayed in the education system an average of 7.2 years compared to 7.3 years for Colombians. The average of the five countries was 7.8 years in 2011.

For the final years of the period analyzed, Chile had 9.7 years of education compared to Peru and Mexico who have an average of 8.7 and 8.5 years respectively. Mexico has the second highest growth in years of education as it recorded a growth rate of 1.68% annualized.

2.3 Expected Years of Education

Diagram 4: Expected Years of Education 1995 - 2011


Source UNESCO (2011).
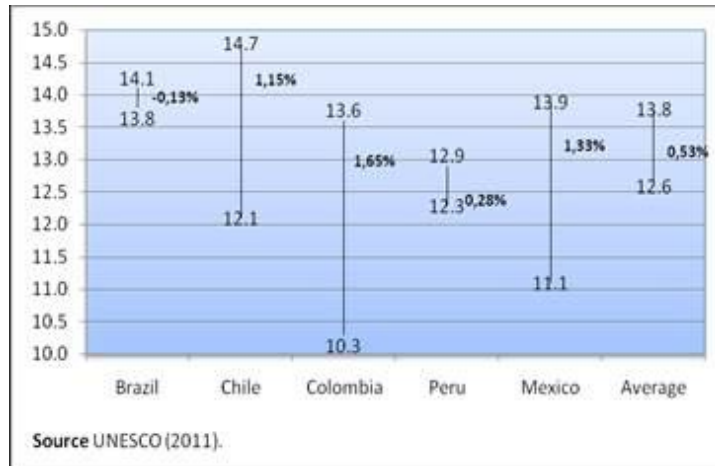
UNESCO defines this factor as the number of years of education that a child of five expects to receive when they enter the school system.

Figure no. 4 shows education expectancy measured in years in the five countries surveyed. The average for the sample improved in the 17 years analyzed at an annual rate of 0.53%, from 12.6 years to 13.8 years. Mexico registered an annualized rate of change of 1.33%, being the best country after Colombia of the sample group of countries.

2.4 Corruption Perceptions Index

Diagram 5: Corruption Perceptions Index

Source: Transperancy International
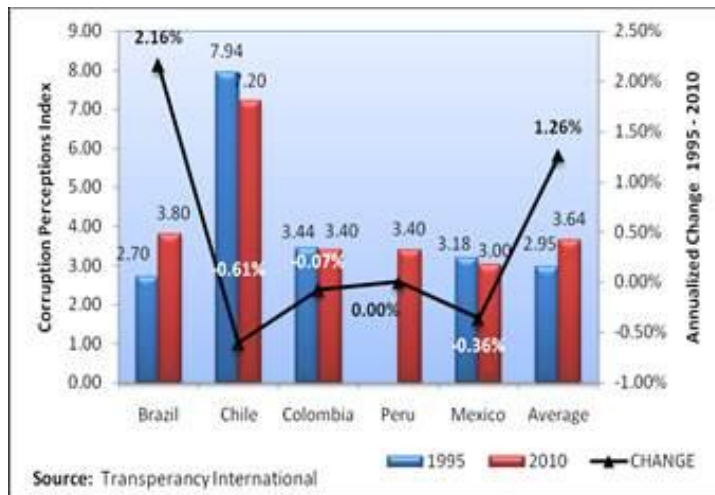
Transparency International measures the extent of public corruption according to business people and country analysts. The index ranges from 0 to 10, where 0 is highly corrupt and 10 not corrupt. According to the above, the perception of corruption improved in the region between 1995 and 2010, going from 2.95 to 3.64, this is a variation of 1.26% annualized.

Meanwhile the perception of corruption in Mexico worsened, going from a score of 3.18 in 1995 to 3.0 in 2010; this is an annualized deterioration of -0.36%.You'll notice deterioration in Chile from 7.94 to 7.20 in 2010.

Overall, the sample countries in the Corruption Perceptions Index of Transparency International deteriorated except for Brazil which showed an improvement of 2.16% annualized in the analyzed period. This positively affected the average of the five countries.

2.5 Global Competitiveness Index

Each year, the World Economic Forum publishes its Global Competitiveness Index. This includes a number of variables to measure the business environment on a seven-point scale with 7 having the maximum competitiveness.

Diagram 6: Global Competitiveness Index


Source: World Economic Forum
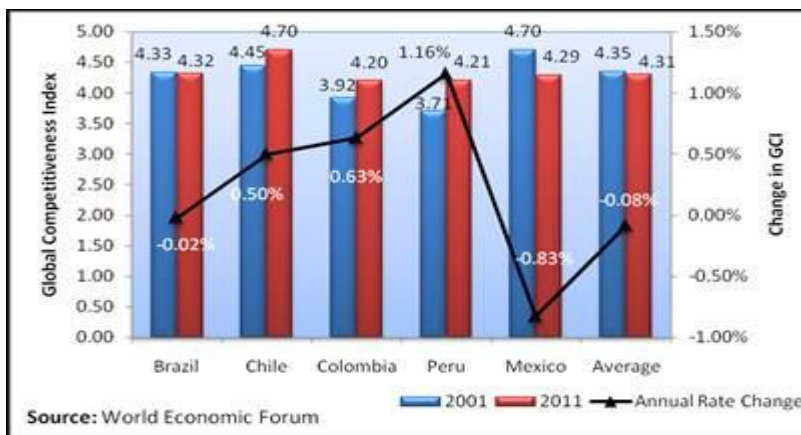
The average competitiveness of our sample of selected countries went from 4.35 in 2001 to 4.31 in 2011, mainly due to the decline in the competitiveness of Brazil and Mexico.

In the 11 years analyzed, Mexico had a loss of competitiveness going from a 4.7 on the GCI in 2001 to 4.3 in 2011. This result is puzzling because one would expect that one of the most important benefits of a trade agreement is to improve the competitiveness of a country as a result of the expansion of trade.

2.6 Life Expectancy at Birth

Diagram 7: Life Expectancy at Birth

Source: UN - DESA(2011)
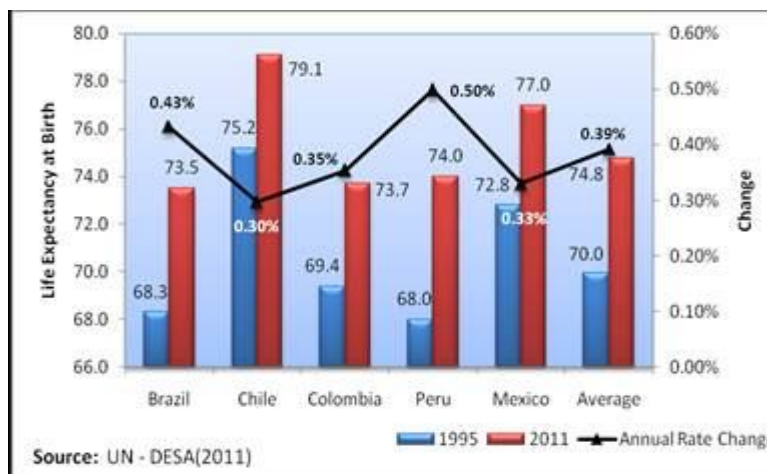
This indicator is the best performing alongside GDP that was registered in the sample countries. For the period 1995-2011 this indicator grew at a rate of 0.39% per year, registering permanent improvement in all sample countries. For the year 1995 Mexico recorded a Life Expectancy at Birth of 72.8 years while in 2011 the UN reported that every Mexican can expect to live an average of 77 years. This is an annual improvement of 0.33% in the period analyzed.

3. Concluding Remarks

The growth problems that are hindering the development of some countries could possibly derive from more than just transaction costs, the systematic failure of contracts and corruption, the inefficiency of the factories or the failure of production. This statement is based on the issues raised by the theory of "neo-institutionalism", on the relationship between the proper functioning of institutions and economic development and the fact that "the political, legal and cultural institutions relate to markets through transaction costs". If the specialized agencies of the executive, legislative and judicial, do not work adequately and efficiently "many exchanges are impossible or involve a huge cost to individuals" (Cuevas, 2004).

Associated with the performance of the CPI is the Global Competitiveness Index (GCI) which also does not indicate a favourable trend in the region. It is important to look at this point, particularly when Mexico, after 17 years of the FTA with the United States and Canada indicates an average decline of 0.83% annually. This is going against all odds that would suggest that the strengthening of international trade would stimulate the flow of capital necessary to modernize a country's productive infrastructure.

References

Agarwala, Singh (2973) "La economía del subdesarrollo, incluye el modelo de A.Lewis, El desarrollo económico con oferta ilimitada de trabajo" Madrid: Tecnos S.A., pp. 333.

Barrère A, (1981) "La crise n´est pas ce que l´on croit", Paris: Economica, pp.86.

Ciarli T., Giuliani E.(2005) "Inversión extranjera directa y encadenamientos productivos en Costa Rica", Santiago de Chile : Cimoli Mario et.al., 2005.

Cimoli Mario et.al., "Heterogeneidad estructural, asimetrías tecnológicas y crecimiento en América Latina", Santiago de Chile: Cimoli Mario, 2005, http://mpra.ub.uni-muenchen.de/3832/1/MPRApaper_3832.pdf.

Departamento Administrativo Nacional de Estadística, DANE (2005) "Censo nacional de población y vivienda, 2005", Bogotá

Deresiewicz W. (2009) "Las desventajas de una educación de élite", Bogota: Revista el Malpensante, No.95.

International Monetary Fund (2008), "GDP per capita (PPP)" www.imf.org, 2008.

International Monetary Fund(2008) "Direct Investment in reporting economy", www.imf.org, 2008.

Isaza J., Meza C. (2004) "Cambios estructurales de la demanda de trabajo en Colombia: un análisis entre 1984-I y 2000-IV", Bogotá: IFPI-G.I.Economía Laboral. Universidad de La Salle.

Keynes J. (2006) "Teoría general sobre la ocupación, el interés y el dinero". México D.F: Fondo de Cultura Económica., Cuarta edición.

Krugman P.(2009) "De vuelta a la economía de la gran depresión y la crisis del 2008". Bogotá: Grupo Editorial Norma.

Krugman P. (1991) "Increasing returns and economic geography" Washington: Journal of Political Economy 99, pp. 483-499.

Krugman P. (1998) "The accidental theorist and others dispatches from the dismal science", New York: W.W. Norton & Company.

Kuhn T.(1969) "The structure of scientific revolutions", Chicago: The University of Chicago Press, Third edition.

Mankiw G.(2007) "Principios de Economía". Madrid: Ed.Thomson, Paraninfo S.A. Magallanes.

Max Neef M. (2007), "Bienestar, Bienser y Bioísmo", conferencia en el foro: "Desarrollo humano como estrategia para el éxito empresarial. Del Bienestar al Bienser". Bogotá: Confamiliar, Afidro, 2007.

Mora J. (2003) "Crecimiento y convergencia: A propósito de Quah", Cali: ICESI, 58, Rev. Estudios Gerenciales No.89, Octubre - Diciembre.

Nieto M., Ortiz W. (2008) "La inversión extranjera directa en Colombia". Bogotá: Universidad   EAN,   Consejo de Empresas Americanas -CEA-. Publicación del CEA

Ricardo D. (1977) "Des principes de l´economie politique et de l´impot", París, Ed. Flammarion.

Robert L. (1998)., "The mechanics of the economic growth". Journal of monetary economics, No.32.

Robert L. (2005), "Lecturas sobre crecimiento económico". Bogotá: Grupo Editorial Norma. Economía, Universidad de los Andes.

Robinson J.(1974) "Ensayos sobre análisis económico", Madrid: Ed. Fondo de Cultura Económico, segunda reimpresión.

Rodríguez J. (2005) "La Nueva Fase de Desarrollo Económico y Social del Capitalismo Mundial." from: http://www.eumed.net/tesis/jjrv/.

Romer D. (1986) "Increasing returns and long-run growt", Ed. Journal of political economy, Vol.94, No.5.

Romer D. (2006) "Macroeconomía Avanzada", Madrid: McGraw Hill, 3ª. Ed..

Martin S. (2000) "Apuntes de crecimiento económico", Barcelona: Antoni Bosch Ed. Barcelona, España, 2da. Edición.

Presidencia de la Republica (2010) "Los Objetivos de Desarrollo del Milenio en México. Informe de Avance 2010" México: Primera edición agosto de 2011

Samuelson, P., William N. (2008) "Economía". México: D.F., McGraw-Hill, Edición # 18.

Smith A. (1976),: "Recherches sur la nature et les causes de la richesse des nations", Paris: Ed. Idées/Gallimard.

Solow R. (1956) "A Contribution to the Theory of Economic Growth". Massachusetts: The Quarterly Journal of Economics, Vol. 70, No.1, Feb.1956, pp.65-94. from:
http://links.jstor.org/sici?sici=00335533%28195602%2970%3A1%3C65%3AACTTTO%3E2.0.CO%3B2-M.

Stiglitz J. (2002) "El malestar en la Globalización", Bogotá: Ed.Taurus,.