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**“Application of the Pyramid Graph:
Global Dimension of Regional Integration Model (GDRI-Model)”**

By

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This research paper presents a new model of analysis to study the trend of regional integration from a global perspective. This new model is called the Global Dimension of Regional Integration Model (GDRI-Model). The rationale for the creation of this model is the necessity to study regional integration from political, social, economic, and technological perspectives simultaneously.

There are four basic phases in the implementation of GDRI-Model. The first phase is the design of the multi-input database table. The second phase is the measurement of individual Regional Global Development Indexes (X_i), which include the Regional Global Political Development Index (X_1), Regional Global Social Development Index (X_2), Regional Global Economic Development Index (X_3) and Regional Global Technological Development Index (X_4). The third phase is the measurement of the Regional Global Development (RGD) index. The last phase is the measurement of Regional Integration Stage (RIS) index.

The general objective of GDRI-Model is to offer policy-makers and researchers a new analytical tool to study the evolution and stages of any regional integration process from a global perspective -- based on a group of indexes and graphs. The GDRI-Model is not intended to be a forecasting model in any case. However, its application is not limited to the study of a special group of countries or regions. It is not constrained by issues about the region or the development stages of any member in a region that is interested in integrating into a single regional trade bloc. The GDRI-Model, in effect, is a simple and flexible scheme, which can be applied to any case of regional integration.

1. Introduction

Over the past 60 years, the field of research on regional integration has changed dramatically, with the discovery and implementation of new theories, models and techniques. In this research paper, the study of regional integration is approached from a few different perspectives, namely, economics, political, social and technological perspectives. In addition, the orientation of these perspectives in the context of regional integration is also accounted for.

Evaluating regional integration and its benefits is not an easy task. The nature of the subject matter constitutes part of the problem in this regard (Devlin and Ffrench-Davis, 1998). Much of the study related to Regional Integration has so far been done from the economics perspective. According to Winters (1997), the study of regional integration from the economic perspective is typically evaluated in light of the probable scenario in the absence of such an approach to the study. Also, as pointed out by Winters, with complications in defining and measuring changes in economic welfare for a particular sub-region, economists use a proxy summary statistics that reflects growth of trade.

This research paper deems it necessary to address regional integration from two different approaches, namely multilateralism approach¹ and regionalism approach.² In this paper, the regionalism approach is adopted. Moreover, the two categories of the regionalism approach are applied. These two categories of regionalism, as suggested by Bhagawati (1999) are the old regionalism (i.e. closed regionalism) and the new regionalism (i.e open regionalism).

The old regionalism was used in the 1950's, 1960's and 1970's. It was used constantly and in successive stages. It covered preferential trade arrangements, free trade area, customs union, common market and economic union. The old regionalism is applied in the development strategy known as Import Substitution Industrialization Strategy (ISI).³

The new regionalism, on the other hand, was developed and promoted in the end of the 1980's and 1990's. It is based on trade liberalization or open market. It uses the export-led oriented or outward oriented model strategy. In contrast with the old regionalism, the new regionalism endeavors to eliminate all trade barriers and non-trade barriers in the same region. Minimal governmental intervention is used in new regionalism to protect the private sector from other countries.

Both cases of regionalism revolve around static trade creation and trade diversion effects. This is partly due to the fact that many economists consider these effects to be the fundamental dimension for evaluating regional integration (Devlin and EFrench-Davis, 1998). This paper, however, is of the view that these models of analysis require considerable transformation for application in the study of regional integration. The core idea presented here is that the study of regional integration should encompass more than one isolated economic or political analysis revolving around one specific problem.

On the basis of the above idea, this paper introduces a new model of analysis that monitors regional integration trend from a new perspective. Called Global Dimension of Regional Integration Model (GDRI-Model), this model studies the individual Regional

¹ "Multilateralism is considered a basic principle of globalization. This principle tries to promote the free market through trade and non-trade barriers measures among nations without discrimination or some preferences under the control of the general agreement trade and tariffs (GATT). From 1947 until today, GATT is considered by many experts in the international trade field as an organization that plays the role of mediator and moderator in the international trade legal framework among all members of GATT that have trade differences. The GATT base is supported by the application of the unconditional and voluntary principles of non-discrimination and reciprocity based on the most-favored-nation (MFN) clause. The MFN complies with the modus operandi of the GATT, and it is given the basic elements to bilateralism in all GATT negotiations among its members. Usually, when we refer to GATT, some confusion may arise especially when the GATT focus its attention on multilateralism, and we forget that the importance of bilateralism which is a vital complementary part of multilateralism. After this clause was implemented, it gave rise to article XXIV. Article XXIV refers to regional agreements based on custom union and free trade areas." (Alan V. Deardorff y Robert M. Stern, 1994).

² Regionalism is defined by many experts as the formation of trade blocs or regional integration agreements (RIA's) based on reduction of tariff measures (import tariff) and non-tariff measures (quotas and quality controls) among its members under the implementation of custom unions and free trade areas among a group of countries in the same geographical area.

³ ISI is applied a higher tariffs to protect some specific areas of production based on the infant industry principle.

Global Development Indexes (Xi)⁴ conditions of each country or domestic global development of the region in its regional integration process. It is based on the application of a group of indexes and graphs. The group of indexes and graphs show the evolution and stages of the regional integration process of region from a global perspective.

If it is assumed in the GDRI-Model that the basic pre-condition to start a stronger regional integration process in any type of trade bloc is a stronger global development experienced by each country or domestic global development in the same region. Another pre-condition for a stronger regional integration process is a combination of historical timing and political and social willingness. For the latter, the countries involved must be interested in creating a formal or informal agreement with all its members so as to consolidate themselves into a single region.

The difference between the GDRI-Model and the traditional models of analysis is that GDRI-Model presents a global understanding in the study of regional integration from economic, political, social and technological views simultaneously. It allows for the detection of the pros and cons in the evolution of the regional integration process in any region.

The objective of the GDRI-Model is to offer to policy-makers and researchers a new alternative analytical tool for studying the results achieved with regional integration. This will benefit the parties concerned in their policy-making and program development.

2. Background Research and Analysis of Different Fields of Research in the Study of Regional Integration

Regional Integration can be studied and researched based on different focuses and approaches. This paper applies four traditional fields of research in the study of Regional Integration: economic, political, social and technological fields of research. In the first part of the research pertaining to this paper, an effort was made to identify the inclination of the fields of research in the study of regional integration. 150 papers (100%) on regional integration from 60 journals published between the 1950's and the 1990's were selected for this purpose. (see WEB: www.jstor.org, 2004) Next, the percentage of participation by fields of research (economic, political, social and technological) in the study of regional integration was calculated.

The following trend in terms of fields of research in the study of regional integration was observed: 50% from the economic field of research, 35% from the political field of research, 10% from the social field of research and 5% from the technological field of research. It was also observed that, compared to the decades of the

⁴ Regional Global development Index (Xi) is formed by the Global Political Development Index (X1); Global Social Development Index (X2); Global Economic Development Index (X3); and Global Technological Development Index (X4). Each Regional Global Development Indexes (Xi) by area together will try to present the different stages that any country can chart its own evolution.

1950's, 1970's and 1980's, the topic of regional integration was more frequently researched and discussed in the journals in the 1960's (25%) and 1990's (35%).

2.1. Economics field of Research in the Study of Regional Integration

For the economics field of research (i.e. the largest field of research) in the study of regional integration, attention was placed on three specific areas: economic theory, political economy and applied economics. Economic theory is divided into two parts, namely microeconomics and macroeconomics, each of which has a different focus. Some of these focuses are: partial or general (type of equilibrium), ex-post or ex-antes (method analysis), static or dynamic (behavior), short term or long term (time frame). Method analysis is either quantitative (statistics and mathematics) or qualitative (in the form of comparative studies based on theories or historical data).

It is observed that the study of regional integration from the economic perspective mainly centers on microeconomics applications (80%). quantitative methods (65%), partial equilibrium (60%), ex-antes approach (65%), static models (65%)⁵. Besides, these applications are used in the short term in most research.

The common theories, models and theorems used by researchers in the economic field of research in the study of regional integration are: International Trade Policy⁶ framework, Optimal Current Area theory⁷, Fiscal Federalism theory⁸, Heckscher-Ohlin model⁹, Kemp and Wan theorem¹⁰. Of all these theories, the most important theory

⁵ Static models do not address questions pertaining to the dynamics of integration such as changes in the rules and policies governing economic integration. (Mattli, 1999).

⁶ It includes the basic tariff analysis; cost and benefits of trade; tariff and non-tariff trade barriers analysis and the new protectionism. (Krugman and Obstfeld, 2000).

⁷ The optimal currency areas were made by Mundell (1961) and Mckinnon (1963). "This approach based its study on monetary policy issues (money, markets for goods, and markets for production factors.) First, we will present the concept of a currency area defined as an area in which a common currency exists (Mattli, 1999). Optimal is defined in terms of the ability of an area to achieve both internal balance (maintenance of full employment and stable internal average price level) and external balance (maintenance of balanced international payments equilibrium). The main idea of optimal currency area was developed because of a dilemma between introducing fixed versus flexible exchange rate. Therefore, Mundell's argument that before applying the optimum currency area, it is necessary to ask what economic characteristics determine the optimum size of the domain of a single currency."

However, Mckinnon (1963) "developed the idea of optimality further by discussing the influence of the openness of the economy based on the ration of tradable and non-tradable goods. This author refers to "optimum" here to describe a single currency area within which monetary-fiscal policy and flexible external exchange rates can be used to give a solution to choose between fixed and flexible exchange rate for one country or region. Usually, the theorists of optimal currency areas argued that fixed exchange rate may reconcile internal and external balance more efficiently than flexible rates if a country is highly integrated within a region." (Mattli,1999). The analysis presented by both authors is based on positive static method (partial equilibrium) focused on monetary policy issues.

⁸ "The fiscal federalism is an offshoot of public finance theory that analyzes the special fiscal problems which arise in federal countries, drawing on the literature on public goods, taxation, income distribution and public debt incidence, and various parts of location theory" (Mattli,1999). We can observe that this approach focuses on fiscal policy issues based on the fiscal coordination. The general objective of this theoretical approach is the improvement of market efficiency focused on the interaction of market and public goods. The method was applied in the fiscal federalism is positive dynamic (general equilibrium).

⁹ The Heckscher-Ohlin (H-O) model (Breton, Scott, and Sincalir, 1997), "which is the whole theoretical construction concerning trade and production based upon a difference between countries in their factor endowments, and four hypotheses or propositions which arise from this model. The H-O model hypothesis that each country will export products that are intensive in the use of that country's

applied is the Customs Union theory¹¹ (including the Second Best theory¹²). The Customs Union theory is still used today by many economists to choose between trade

creation and trade diversion¹³ for evaluating regional integration. However, the static analysis used in the Customs Union theory poses a problem: it frequently uses a partial competitive equilibrium framework to arrive at a general conclusion about a process that is a general equilibrium phenomenon. (Devlin and French-Davis, 1998).

According to Winters (1997), many economists are of the stand that trade creation versus trade diversion is not the core of the problem. The problem lies with the deficiency of the models of Dynamics and Empirical Foundations used for testing them. In effect, Klein and Plummer (2002) point out that, economists whose research into regional integration is based on ex-post models include a gravity model, an import-growth simulation and other regression approaches. This is because Computational General Equilibrium (CGE)¹⁴ Model (multi-country and multi-commodity dimension) has become very popular among economists.

All the above-mentioned economic models of analysis persist in measuring changes in welfare based on cost/benefit consideration. This research paper, on the other hand, asserts that the study of regional integration should not focus merely on the

abundant factor of production (labor or capital), and will import products that are intensive factor of production (labor and capital) in the use of the country's scarce factor of production."

¹⁰ Kemp and Wan theorem present this proposition related to the formation of custom unions. "It is consider any competitive world trading equilibrium, with any number of countries and commodities, and with no restrictions whatever on the tariffs and other commodity taxes of individual countries, and with costs of transportation fully recognized. Now let any subset of the countries form a customs union. Then there exists a common tariff vector and a system of lump-sum compensatory payments, involving only members of the union, such that there is an associated tariff-ridden competitive equilibrium in which each individual, whether a member of the union or not, is not worse off than before the formation of the union." (Kemp and Wan, 1976).

¹¹ "The custom union argument is based on the free-trade point of view, whether a particular custom union is a move in the right or in the wrong directions depend, therefore, so far as the argument has as yet been carried, on which of two types of consequences ensue from that custom union. Where the free trade-creating force is predominant, one of the members at least must benefit, both may benefit, the two combined must have a net benefit, and the world at large benefits; but the outside world loses, in the short-run at least, and can gain in the long-run only as the result of the general diffusion of the increased prosperity of the custom union. Where the trade-diverting effect is predominant, one at least of the member countries is bound to be injured, both maybe injured, the two combined will suffer a net injury, and there will be injury to the outside world and to the world at large." (Viner, 1950).

¹² "The second best theory was presented by Lypsey and Lancaster (1997). These two authors present a deeper study about the custom union theory of Viner based on the application of a positive dynamic method (general equilibrium) to explain the custom union effect on the world trade. The contribution of Lypsey and Lancaster in the custom union theory follows the Paretian optimum which requires the simultaneous fulfillment of all the optimum conditions based on the general economic problem of maximization. A function is maximized subject to at least one constraint, in this case production function and utility function."

¹³ "Trade-creation effect occurs when some domestic production in a nation that is a member of the custom union is replaced by lower-cost imports from another member nation. Assuming that all economic resources are fully employed before and after formation of the custom union, this production is based on comparative advantage. The Trade-diversion effect occurs when lower-cost imports from outside the custom union are replaced by higher cost import from a union member. This result because of the preferential trade treatment given to member nation. Trade-diversion effect, by itself, reduces welfare because it shifts production from more efficient producers outside the custom union to less efficient inside in the union. Thus, trade diversion worsens the international allocation of resources and shifts production away from comparative advantage." (Salvatore, 1991).

¹⁴ "The CGE models are standard tool for analyzing trade policy. The case of general equilibrium models are: first liking trade and productivity growth; second foreign investment and productivity growth; third, endogenous growth and CGE modeling." (Klein and Plummer, 2002).

cost/benefit analysis; instead it should take into consideration a series of favorable conditions that the Regional Global Development Indexes (Xi) presents in each country or domestic system development in the same region.

Furthermore, the economics field of research merely applies the positive theories of welfare gains and losses associated with regional integration; it provides no explanations of the political choices that allow for integrated fields of research. As such, the economic field of research negates the global context of the evolution and trend of regional integration process as a whole.

In a nutshell, this research paper maintains that the economic field of research poses many limitations in the study of the effects of regional integration, and that it is merely one part of the complicated puzzle of regional integration research. On this account, this paper further maintains that the study of regional integration requires simultaneous inclusion of social, political and technological dimensions of research.

2.2. Political, Social and Technological Fields of Research

The study of regional integration from the political dimension is also pervasive. It is observed that much study of regional integration involves extensive elaboration of the following politically oriented topics: institutional framework (functionalism or neo-functionalism), policy dimensions and agreements (negotiation) and international law issues.

As observed, more qualitative rather than quantitative methods of evaluation are used in the political dimension of research. Just as the economic dimension of research, the political dimension of research in the study of regional integration see many limitations. However, as pointed out by Mattli (1999), the political context in which integration occurs has been specified in the political dimension of research and this has provided insightful accounts of the process of integration.

The third field of research, that is the social field of research focuses on issues such as history, culture, education, social welfare programs and social policies applied by governments. Usually such research is in the form of comparative study based on basic statistical comparison, feedbacks, interview results, history and social theoretical frameworks. Many of these studies are confined to highly important issues that are worthy of consideration in the study of the effects of regional integration.

The fourth field of research that is the technological field of research has a relatively smaller presence. It focuses mainly on four specific topics: regional electrical inter-connection, telecommunications, technology transfer, and Research and Development (R&D). Some of these research documents involve advanced technical terminologies and the application of quantitative methods (statistics and mathematics).

3. The Global Dimension of Regional Integration Model (GDRI-Model)

Economic, political, social and technological dimensions of research into regional integration clearly do not provide a global perspective in the understanding of regional integration. For this reason, the Global Dimension of Regional Integration Model (GDRI-Model) is proposed in this paper to address the issue.

The GDRI-Model is a measuring tool for studying regional integration from a global perspective. The proposed GDRI-Model is a simple and flexible model. It applies dynamic and general equilibrium analysis to show the past and present situations in the regional integration process of any region based on a set of indexes and graphs. Its field application is not constrained by region or the development stage of each member interested in integrating into a single regional bloc.

The GDRI-Model can be applied to any form of regional integration process: between developed countries (e.g. within Europe Union –EU-), between developed and developing countries (e.g. within North America Free Trade Area –NAFTA-), between developing countries (e.g. within MERCOSUR and ASEAN), and between developing and less developed countries (e.g. within Central America Common Market -CACM-).

The application of the GDRI-Model is based on the characteristics, conditions and historical moments of a region's regional integration development. The GDRI-Model is like a simulator that applies a series of simulations in different scenarios and in different phases of the regional integration process. This model does not attempt in any case to be a forecasting model. It focuses on the past and present situations in the regional integration process as a whole. It helps to provide a general idea about the situations and evolution of the regional integration process in any region.

3.1. The Domestic System Development Concept

This part of the research presents a new concept entitled “Domestic System Development (DSD).” DSD consists in all economic, political and social characteristics that any country can show in its different phases of development. GDRI-Model assumes that each country has its own domestic system development. At the same time, it defines

regional integration as the joining of certain number of different countries (or DSD) that is interested to create a Regional System Development (RSD). The DSD concept is based on five assumptions:

- 1.- Change of Domestic System Development (DSD) in any country cannot be forced; it can only be induced by material incentives and motivation.
- 2.- The Domestic System Development (DSD) of any country is spurred by the limitation of resources.
- 3.- Each Domestic System Development (DSD) has its unique characteristics. Therefore it might be difficult to try to implement a successful Domestic System Development (DSD) in another less successful Domestic System Development (DSD).
- 4.- The RSD concept attempts to integrate different DSD into a Regional Integration Agreement (RIA) depends on the different Domestic System Developments (DSD) that are available for integrating into a single regional system.
- 5.- The creation of Regional System Development (RSD) depends on the flexibility of each Domestic Social Development (DSD).

The Domestic System Development (DSD) concept offers a new perspective of analysis and research in the field of regional integration and development economics. The traditional research is based on economic, political, social and technological point of view; but with DSD concept, it is possible to visualize different countries' developments from a global perspective.

3.2. Phases in the Global Dimension of Regional Integration Model (GDRI-Model)

Phase I: Design of the Multi-input Database Table

The multi-input database table is a new style of analysis framework that permit storage of large amount of data to measure a single variable. This single variable can show the evolution of any phenomenon from a global perspective. The multi-input database table is designed to evaluate either by country or region (see diagram 1).

The first type of multi-input database table pertains to "country or domestic system development". It uses "N" number of variables. The number 'N' is decided by the researchers or policy-makers. The number of cases in the study is represented by "M". In the case of GDRI-Model, "M" represents only one country (domestic system development). The time factor "T" is dependant on the time parameters that the

researchers or policy-makers are interested in using. Therefore, “T” can be in terms of years or decades.

The second type of multi-input database table pertains to “region or regional system development”. All the conditions and functions of “N”, “M” and “T” factors are the same as that in the first type of multi-input database table, except that “M” here represents a “region or regional system development” rather than a “country or domestic system development”. For this research paper, this second type of multi-input database (by region) is adopted.

Phase II: Measurement of Regional Global Development Indexes (Xi)

The second phase of the implementation of the GDRI-Model involves the measurement of Regional Global Development Indexes (Xi) using the variables in four basic multi-input database tables (see diagram 1). The Regional Global Development Indexes are Regional Global Political Development Index (X1)¹⁵, Regional Global Social Development Index (X2)¹⁶, Regional Global Economic Development Index (X3)¹⁷ and Regional Global Technological Development Index (X4).¹⁸ These variables are analyzed with their codes, descriptions and parameters respectively (see tables 2, 3, 4, and 5).

The parameters are divided into two categories. The categories are:

(i) Quantitative variables

(i.a.) The measurement of Regional Variation Rate (RVR) consists of two phases. The first phase is to measure the Variation Rate by Country (VRC) VRC is

¹⁵ The measuring of Regional Global Political Development Index (X1) originates from the calculus obtained from the politics multi-input database table (see table 2). After we obtain the result of X1, we can proceed to classify our results into three different parameters. These parameters are under-developed stage or level 1 ($0 \leq X1 \leq 0.33$), X1 index is developing stage or level 2 ($0.34 \leq X1 \leq 0.66$) and X1 index is developed stage or level 3 ($0.67 \leq X1 \leq 1$).

¹⁶ The measuring of Regional Global Social Development Index (X2) originates from the calculus applied in the social multi-input database table (see table 3). After we obtain the result of X2, we can proceed to classify our results into three different parameters. These parameters are under-developed stage or level 1 ($0 \leq X2 \leq 0.33$), X2 index is developing stage or level 2 ($0.34 \leq X2 \leq 0.66$) and X2 index is developed stage or level 3 ($0.67 \leq X2 \leq 1$).

¹⁷ The measuring of Regional Global Economic Development Index (X3) originates from the calculus applied in the economic multi-input database table (see table 4). After we obtain the result of X3, we can proceed to classify our results into three different parameters. These parameters are under-developed stage or level 1 ($0 \leq X3 \leq 0.33$), X3 index is developing stage or level 2 ($0.34 \leq X3 \leq 0.66$) and X3 index is developed stage or level 3 ($0.67 \leq X3 \leq 1$).

¹⁸ The measuring of Regional Global Technological Development Index (X4) originates from the calculus applied in the technological multi-input database table (see table 5). After we obtain the result of X4, we can proceed to classify our results into three different parameters. These parameters are under-developed stage or level 1 ($0 \leq X4 \leq 0.33$), X4 index is developing stage or level 2 ($0.34 \leq X4 \leq 0.66$) and X4 index is developed stage or level 3 ($0.67 \leq X4 \leq 1$).

calculated based on two periods: present period data minus last period data. The data of each period can be in percentage or absolute values. In the second phase, the sum of all VRC is divided by the total number of countries in the trade bloc. The end result is the number RVR.

$$RGR = \Sigma VRC / \text{total number of countries}$$

$$RGR = \Sigma (\text{present period data} - \text{last period data}) / \text{total number of countries}$$

The RVR, it can then be compared against each VRC. The final result obtained presents two possible scenarios: first, if $RVR \leq VRC$ then this specific country in the trade bloc obtains a value of 1; second, if $RVR \geq VRC$ then this specific country in the regional bloc obtains a value of 0.

(i.b.) The Regional Average Rate (RAR) is obtained by dividing the sum of the local input data of each country in the trade bloc by the total number of countries in the trade bloc.

$$RAR = \Sigma \text{local input data} / \text{total number of countries}$$

The RAR is fixed parameters that can be compared against each local input data by country. The final result of RAR presents two possible scenarios: first, if the $RAR \geq \text{country value}$, then the final data has the average rate = 0; second, if the $RAR \leq \text{country value}$, then the final data has the average rate = 1.

(ii) Qualitative variables

(ii.a.) Historical Data Focalization (HDF) can be classified by existence (i.e. an attempt is made to prove if 1 = existing data or 0 = non-existing data). This type of qualitative variables provides an alternative to measure non-quantitative variables that affect ranking regional integration process.

(ii.b.) Ranking List (RL) is originated from the best results of certain areas (social, economic, political and technological) in some countries. RL can be found in international organizations such as United Nations, World Bank, International Monetary Fund and etc. The size of the RL is determined by the researcher or policy maker interested to apply RL.

Once the RL is established countries in the trade bloc can be compared. The RL can present two possible results: first, if the country in the trade bloc is found in the RL, then this country receives a value of 1; second, if the country in the trade bloc cannot be found in the RL, then this country receives a value of 0.

The reason to use the binary system in each multi-input database table is that all variables have the same level of importance and weight in the study of regional integration. The binary system helps to maintain a balance among all variables in each multi-input database table. Another reason is that the binary system helps to create an alternative model of analysis countries with limited information, especially in the case of developing countries and less developed countries (LDC's).

The number of variables used in the GDRI-Model varies, depending on the objectives of the researchers or policy-makers and the orientation of the cases of research. In the case of this research paper, 98 variables with their respective parameters were selected: 19 variables for Regional Global Political Development Index (X1); 15 variables for Regional Global Social Development Index (X2); 54 variables for Regional Global Economic Development Index (X3) and 10 variables for Regional Global Technological Development Index (X4).

Once the number of variables is determined, the next step is to collect the statistical and historical data that constitute the variables. All variables in each multi-input database table may not have a direct relationship between them -- they may be dependent variables or exogenous variables. However, all the variables in each multi-input database table are meant to measure a single general variable, that is, each of the Regional Global Development Indexes (Xi).

Each of the four Xi indexes to be measured is viewed as a dependent variable (i.e. exogenous variable). However, there is no connection and interdependency among these four Xi indexes when they are joined in the graph. These four Xi indexes are used to draw a graph that represents the evolution and stages of the regional integration process of the region from a global perspective. The objective of this research paper is to apply the GDRI-Model in the case of single trade bloc (e.g. Central America Common Market –CACM-) and many trade blocs simultaneously (e.g. European Union –EU-, North America Free Trade Area –NAFTA-, Association of Southeast Asian Nations –ASEAN-, MERCOSUR, and Andean Community –AC-).

Steps to Obtain Regional Global Development Indexes (Xi)

There are four Regional Global Development Indexes (Xi) to be obtained. These four Xi indexes are: Regional Global Political Development Index (X1), Regional

Global Social Development Index (X2), Regional Global Economic Development Index (X3) and Regional Global Technological Development Index (X4). The first step is to define all variables and parameters. Once all the variables and parameters are defined, all the data based on the variables and parameters is listed in each multi-input database table.

The next step is to add up the values of all variables in the column of the Actual Situation (AS) in each multi-input database table. The Total Possible Results (TPR) obtained are then located in the TPR column next to AS column. With TPR in place, the next step is to compute each Regional Global Development Indexes (Xi). The computation is done by applying the expression (1) to the values in the multi-input database tables.

$$(1) \quad X_i = \frac{\sum_{i=1}^4 AS(i)}{\sum TPR(i)} \times 100$$

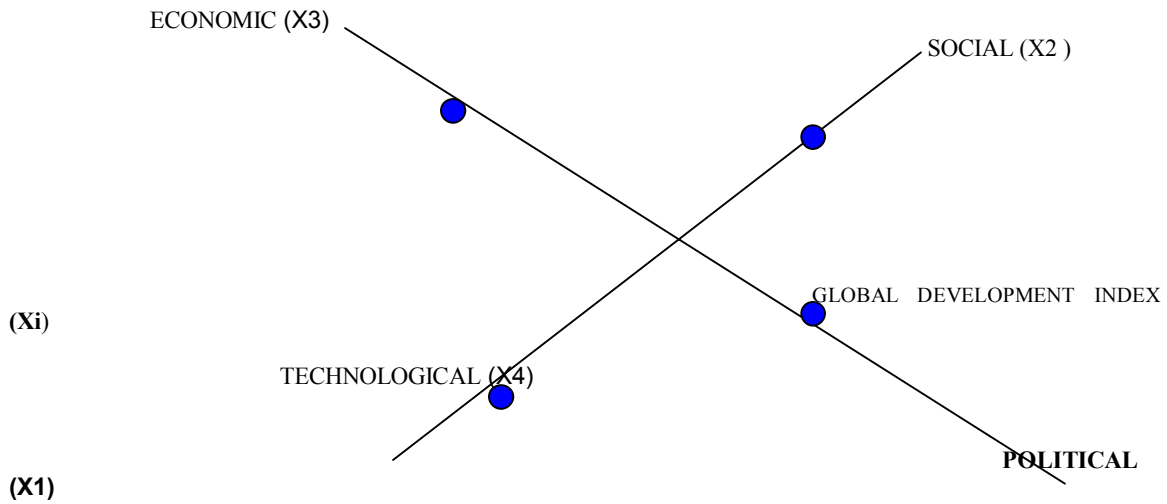
Following the above four steps, the fifth step is the plotting of two graphs: (a) the Regional Global Development Indexes (Xi) (see Graph 1), (b) the regional Political, social, Economic and Technological Diagnostic (see Graph 2). The latter graph serves as a means for studying the balance between achievements and difficulties that any region may experience in its regional integration process (see Graph 2).

Introduction to Analysis of RGD Index and RIS Index Based on Global Development Index

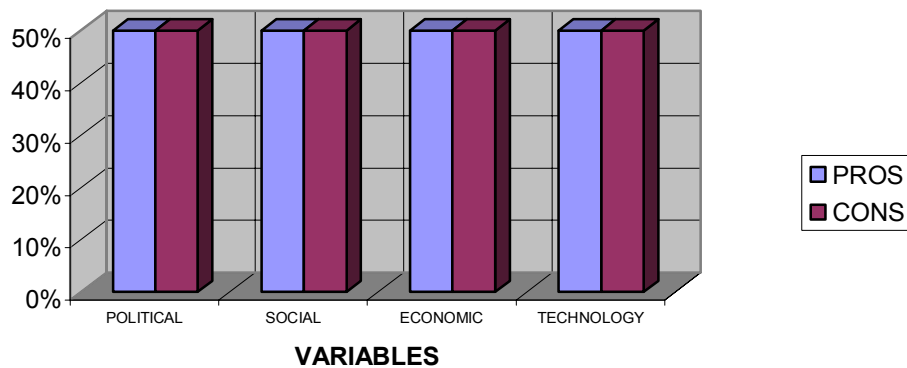
Each Regional Global Development Indexes (Xi) plays an important role in the measurement of the Regional Global Development (RGD) index and the Regional Integration Stage (RIS) index. These two indexes can be affected by any change in the Xi indexes in the short and long run.

The Xi indexes may reflect one of two different scenarios. First, if some or all-Regional Global Development Indexes are political (X1), social (X2), economic (X3) and technological (X4) increase, then RGD index and RIS index may increase. The second scenario is, if some or all Regional Global Development Indexes (Xi) by area of development (political, social, economic and technological) decrease, then the RGD index and RIS index may decrease.

GRAPH 1
THE REGIONAL GLOBAL DEVELOPMENT (Xi) INDEXES DIAGRAM



GRAPH 2
THE INTRA-REGIONAL POLITICAL, SOCIAL, ECONOMIC AND TECHNOLOGY DIAGNOSTIC



Phase III: Measurement of the Regional Global Development (RGD) Index

The third phase of the implementation of the GDRI-Model presents a general definition about the Regional Global Development (RGD) index (see Diagram 1). The RGD index is an indicator to compare different historical periods of the regional integration process in any region. It is based on the Regional Global Development Indexes (Xi) of a region. Therefore, the RGD index is a means of analyzing the evolution of any regional integration process from a global perspective.

Steps to Obtain the RGD Index

The first step is to plot each (Xi) index: Regional Global Political Development Index (X1), Regional Global Social Development Index (X2), Regional Global Economic Development Index (X3) and Regional Global Technological Development Index (X4) on the Cartesian plane (see Graph 3 and Graph 5). It should be noted that the RGD index value (single percentage) is an approximation of the past and present situations that any trade bloc may encounter in its evolution. The RGD index is the summation of all the four Regional Global Development Indexes (Xi).

The second step is to plot the RGD graph based on the total value of the four Regional Global Development Indexes (Xi). This is followed by calculation of the Regional Global Development (RGD) index based on expression (2). It should be noted that the values of the Xi indexes are independent of one another. The RGD graph consists of four different areas, where each area has a limit equivalent to 0.25. The total value of these four areas is equal to 1 as observed in the expression (2.6.)

Each axis of Graph 3 and Graph 4 is either the base or the height of the graph (represented by B and H respectively in the graph). The RGD 1 uses the result of the global development index in the axis X1 which is equal to B1, and the global development index in the axis X2 which is equal to H1, follow by application of (2.1.) The same steps and expression are used for RGD 1, RGD 2, RGD 3 and RGD 4 (see graph 4). The total RGD index for this period is the sum of all the RGD's. This is depicted in expression (2.5.)

$$(2) \quad \sum_{i=1}^4 \text{RGD} (i) = [\text{Base} (X_i)] \times [\text{Height} (X_{i+1})] / 2$$

$$2.1.) \quad [B1 = H4]: \text{RGD} 1 = [X1(B1), X2(H1)] / 2$$

$$2.2.) \quad [B2 = H1]: \text{RGD} 2 = [X2(B2), X3(H2)] / 2$$

$$2.3.) \quad [B3 = H2]: \text{RGD} 3 = [X3(B3), X4(H3)] / 2$$

$$2.4.) \quad [B4 = H3]: \text{RGD} 4 = [X4(B4), X1(H4)] / 2$$

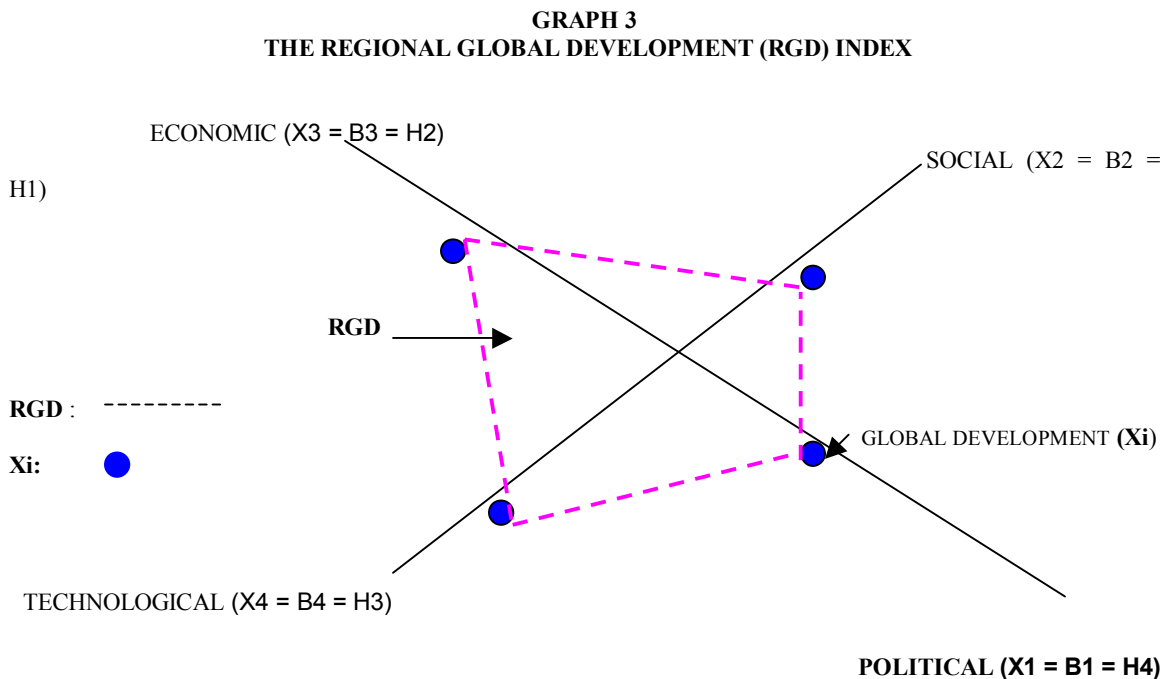
$$2.5.) \quad \text{RGD} = \text{RGD} 1 + \text{RGD} 2 + \text{RGD} 3 + \text{RGD} 4$$

B= Base H= Height Xi = initial actual panorama Xi +1 = next actual panorama

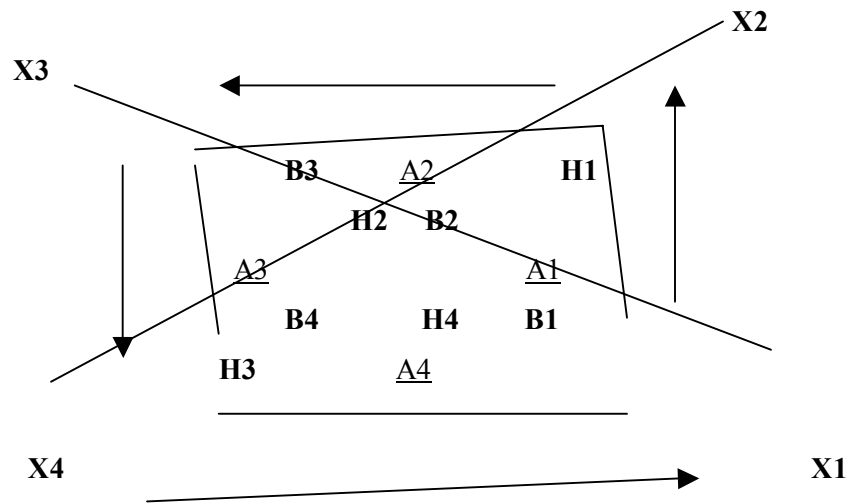
Analysis of RGD Index

The analysis of the RGD index is based on the comparison of two periods or regions. In the case of this research paper, two periods (i.e. first period and second period) are compared. The total RGD index may present three possible scenarios, namely (a) expansion ($\text{RGD}' \text{ first period} < \text{RGD}'' \text{ second period}$), (b) stagnation ($\text{RGD}' \text{ first period} = \text{RGD}'' \text{ second period}$) and (c) contraction ($\text{RGD}' \text{ first period} > \text{RGD}'' \text{ second period}$).

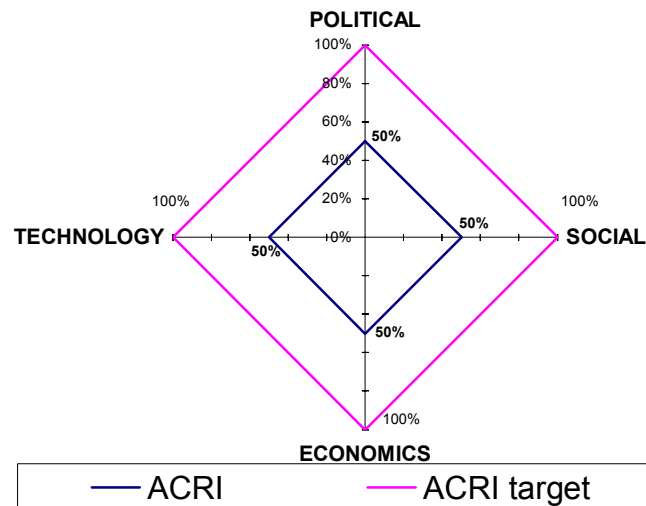
In terms of time-span, the RGD index can be measured and compared on a yearly basis, five-yearly basis, and by decades. For this research, the time-span is divided into four specific decades (the 1960's to the 1990's), which can later be compared. In terms of space, the RGD index can be measured and compared in relation to countries or regional blocs. At any historical moment, the regional integration process in any region is based on the comparison of the size of the Regional Global Development (RGD) index.



GRAPH 4
AREAS OF ROTATION APPLIED TO RGD INDEX



GRAPH 5: REGIONAL GLOBAL DEVELOPMENT (RGD) INDEX



Phase IV: Measurement of the Regional Integration Stage (RIS) Index

The last phase in the implementation of the GDRI-Model is the measurement of the Regional Integration Stage (RIS) index (see Diagram 1). The RIS index measures the degree or stage of the regional integration development that any region achieves in its different stages of evolution. The RIS index is considered a dependent variable in the GDRI-model.

In the measurement of the RIS index, four Regional Global Development Indexes (X_i) are used: Regional Global Political Development Index (X_1), Regional Global Social Development Index (X_2), Regional Global Economic Development Index (X_3) and Regional Global Technological Development Index (X_4). A constant coefficient – Regional Integration Approach Incline (RIAI) -- is also used concurrently. The RIAI is represented by a, b, c, and d in expression (3) and is applied to each global development index (X_i). Each RIAI (a, b, c, or d) has a limit that is equal to 1. [Refer to expression (3)]. The sum of the RIAI's cannot be more than 1.

The application of the RIAI is twofold. The first application is the RIAI Homogeneous Interest. In this application, each RIAI has the same level of importance in the analysis [Refer to expression (3.1.)]. The second application is the RIAI Incline. There are four possibilities in this application: political approach incline (3.2.), social approach incline (3.3.), economic approach incline (3.4.) and technological approach incline (3.5.)

Analysis of RIS Index

After the type of RIAI to be applied is determined, the Regional Integration Stage (RIS) index is measured according to expression (3). The RIS index analysis may reveal one of three different scenarios, namely (a) under-developed stage ($0 \leq \text{RIS} \leq 0.33$), (b) developing stage ($0.34 \leq \text{RIS} \leq 0.66$) and (c) developed stage ($0.67 \leq \text{RIS} \leq 1$). The analysis of the RIS index can provide a general idea or approximation of the stage of regional integration achieved in any region through time and space.

The following is a suggested combination of the application of the RIAI in the measurement of the RIS index:

$$(3.) \quad Y = \text{RIS} = aX_1 + bX_2 + cX_3 + dX_4 \leq 1$$

$$(3.1.) \quad a = 0.25, b = 0.25, c = 0.25, d = 0.25 = 1 \Rightarrow \text{RIAI homogeneous interest}$$

$$(3.2.) \quad a = 0.40, b = 0.20, c = 0.20, d = 0.20 = 1 \Rightarrow \text{RIAI political approach incline}$$

$$(3.3.) \quad a = 0.20, b = 0.40, c = 0.20, d = 0.20 = 1 \Rightarrow \text{RIAI social approach incline}$$

$$(3.4.) \quad a = 0.20, b = 0.20, c = 0.40, d = 0.20 = 1 \Rightarrow \text{RIAI economic approach incline}$$

$$(3.5.) \quad a = 0.20, b = 0.20, c = 0.20, d = 0.40 = 1 \Rightarrow \text{RIAI technological approach incline}$$

It must be highlighted that the above combination represents only several of many possibilities or permutations. This should draw attention to the flexibility of the RIS index in adapting to any situation or chosen policy mode. The RIS index presents an approximation of the global development from political, social, economic and

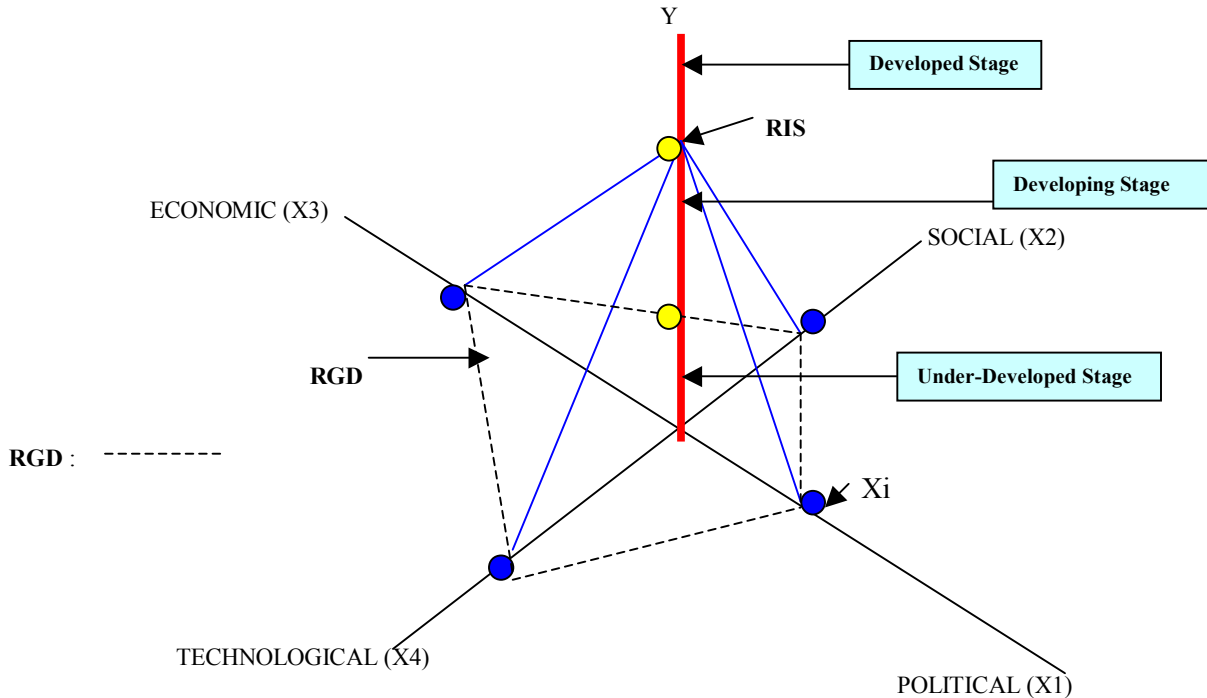
technological perspectives concurrently based on a new concept of graphic representation (see Graph 6).

This new concept of graphic representation consists of five axes, each of which has a positive value. (In the case of this research, the value in each axis is represented by a percentage). Once the axes of the graph are in place, the next step is to plot the four X_i indexes (politics, social, economic, and technology X_i indexes) in four of the axes respectively. These X_i indexes are independent variables. The total value of the four axes is equal to 1. (see Graph 6).

The fifth axis, which is represented by Y and positioned in the center of the graph (among the other four axis) represents the dependent variable RIS index. This fifth axis is the convergent point of all the other four axes or more precisely, the four areas -political, social, economic, and technology- of Regional Global Development Indexes (X_i). The RIS index (Y) is depicted as follows in expression (4):

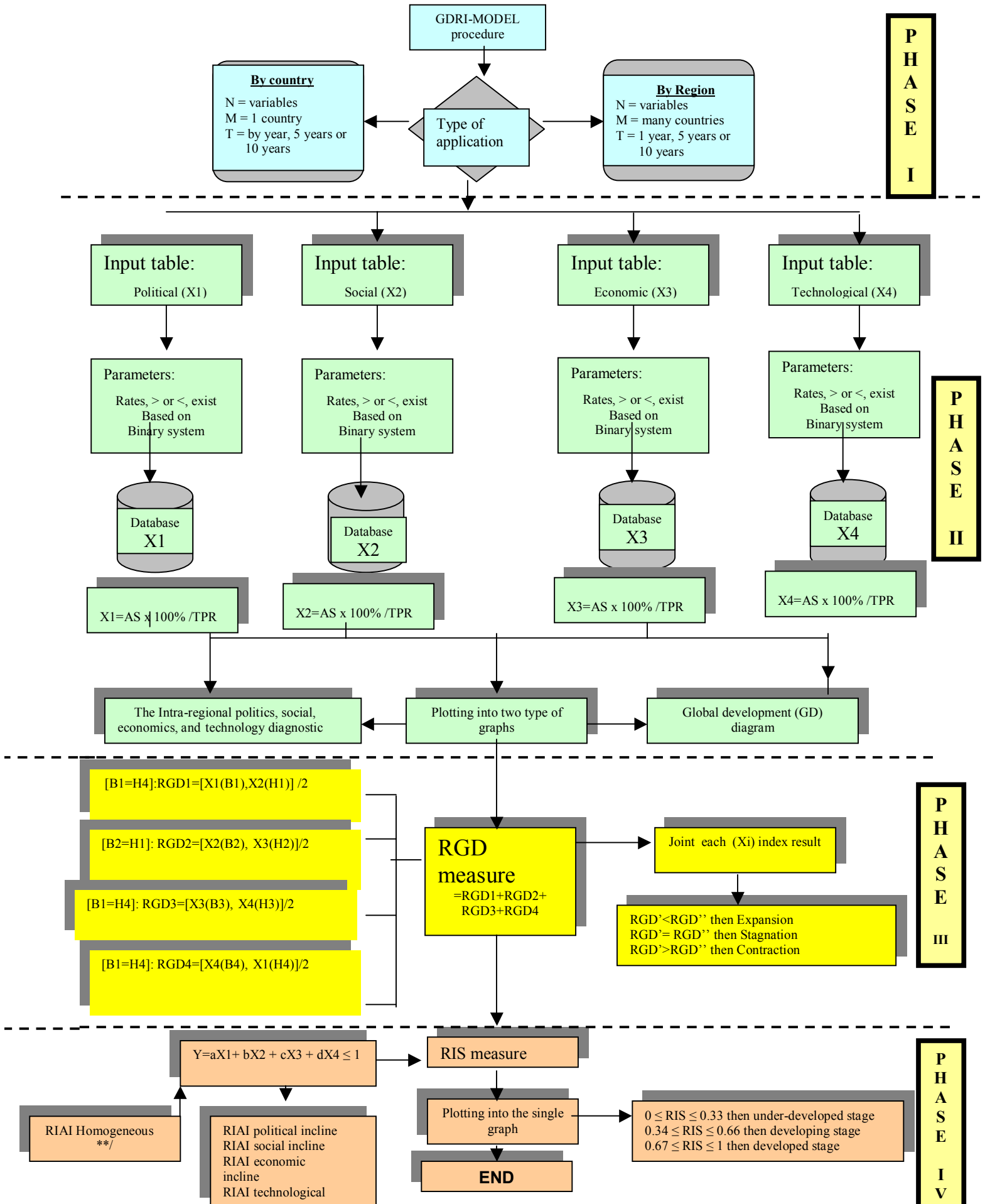
$$(4) \quad Y = F(X_1, X_2, X_3, X_4) \leq 1$$

GRAPH 6
THE GRAPH OF THE REGIONAL INTEGRATION STAGE (RIS) INDEX



RGD: Regional Global Development Index
 X_i : Regional Global development Index
RIS: Regional Integration Stage Index

DIAGRAM 1: FLOWCHAT OF GDRI-MODEL



4. Application of the GDRI-model into a Single Trade Bloc: The Central American Common Market (CACM)

In this research paper, the Global Dimension of Regional Integration Model (GDRI-Model) is applied to the case of the Central American Common Market (CACM).

¹⁹ The CACM has a long history and has encountered many difficulties in its regional integration process. With the application of the GDRI-Model, this research paper seeks to compare the Regional Global Development Indexes (Xi), Regional Global Development (RGD) index and the Regional Integration Stage (RIS) index by decade, from the 1960's to the 1990's. These indexes are evaluated in relation to the historical framework of CACM. The GDRI-Model can provide a global view about the evolution and stages of the Central American regional integration process.

4.1. The Growth Stage of Central American Economic Integration in the 1960's

The establishment of the Central American Common Market (CACM) scheme was based on the development strategy known as Import Substitution Industrialization strategy (ISI). The ISI²⁰ strategy was taken as the basic pillar for integrating Central America into a single market. The initial stage of this scheme was considered successful in some countries in this region. The Regional Global Economic Development Index (X3) then was 0.39 (see Table 1 and Graph 7). In this period the old regionalism (closed regionalism) approach was applied by the CACM.

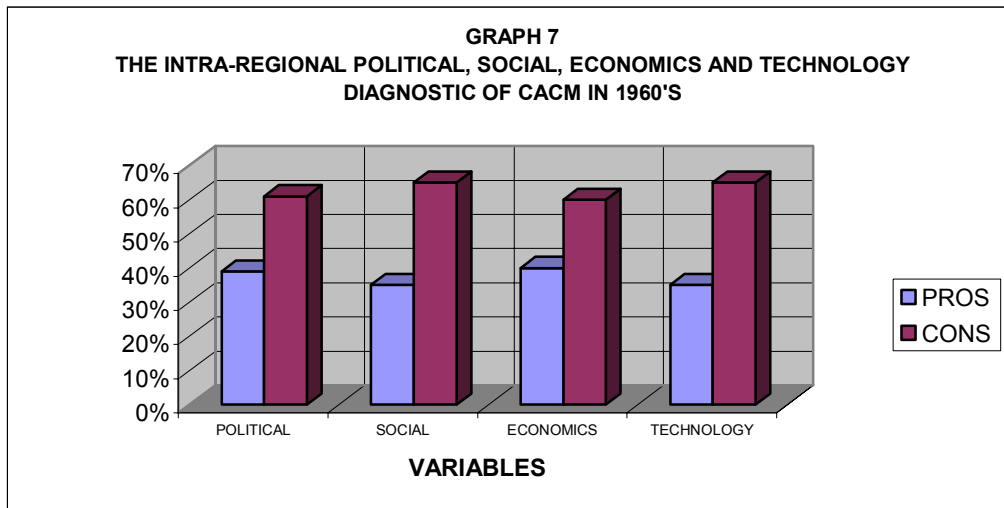
It is now being suggested that much of the growth during this period was actually due to export and, more specifically, to exports that were destined abroad rather than among the countries. Favorable terms of trade, especially with respect to coffee, sugar cane and bananas had helped to provide the foreign exchange necessary for importing machinery and equipment. The Regional Global Technological Development Index (X4) was recorded as 0.40.

It is important to note that in the 1960's the major Central American countries presented a better political situation compared to the 1970's and the 1980's. This was reflected in the Regional Global Political Development Index (X1) of 0.39. The significant progress in the industrialization process in Central America in the 1960's was achieved in terms of labor productivity. It can be observed in the higher Regional Global Social Development Index (X2) of 0.25, which falls within the developing stage or level 2. The Regional Global Development (RGD) index was then 0.13 (see Table 1 and Graph 8). This reflects a good initial stage of the CACM regional integration process. With the

¹⁹ Central America Common Market (CACM) was formed in 1960 by four countries Guatemala, El Salvador, Honduras, and Nicaragua, two years later Costa Rica opted to join to integrate in this trade bloc. The CACM was reactive in 1993 (see WEB: www.sieca.org.gt).

²⁰ ISI in Central America was surged by the variation of the international prices of the traditional agriculture product exported from Central America to the rest of the world, and its impact under five small economies. The production structure of Central America is vulnerable to speculation and economic cycles in the international market. ISI would be improving the scale of economy across a new technology introduced in its industrial sector, creation of a modern infrastructure, and fiscal policy harmonization.

Regional Integration Stage (RIS) index being 0.36, the CACM was in developing stage of regional integration (see Table 1 and Graph 9). It can be concluded that in the 1960's CACM witnessed a strong base in its initial stage.



4.2. Recession Stage of Central American Regional Integration in the 1970's

The Central American regional integration process started to decline in the 1970's. The average growth rates relative to those achieved in the previous decade declined. The CACM crisis was a result of oil price shocks (end of 1972 and 1973) that affected the world economy. The CACM could not cope with this crisis. The Regional Global Economic Development Index (X3) of the CACM then fell to 0.25 (see Table 1). The major root of the problem was that CACM depended mainly on oil and capital goods imports and these were reduced during that time. The Regional Global Technological Development Index (X4) was then 0.20 (see Table 1). Consequently, CACM saw a drastic shift in the terms of trade, as well as increased production cost. The latter generated high levels of inflation and negative payoff trade with the rest of the world. Consequently, the interregional system of payments of the region collapsed and a foreign exchange crisis developed.

There was growing disillusionment among CACM members. Honduras complained that the benefits of integration were not being equally shared. The concentration of investment and industry in Guatemala and El Salvador then constituted a large obstacle in the regional integration process of the CACM. The only two countries that benefited under the CACM were Guatemala and El Salvador. Both countries obtained trade surpluses as a result of increasing interregional trade. This prompted Honduras' to eventually abandon the CACM (Fernandez, 1986). Honduras departure from the CACM was justified by the famous football war (Guerra Del futbol) between El Salvador and Honduras, but the real reason behind its action was strongly debated.

Several social problems also started to surface in CACM in the 1970's. Such problems included poverty, reduction of government expenditures in social programs and higher corruption levels. This situation was reflected in the Regional Global Social Development Index (X2) of 0.15 (see Table 1). It was also in the 1970's that several social movements (e.g. guerrilla warfare) were formed against the military regimes especially in Nicaragua, Guatemala, and El Salvador. As a result, the Regional Global Political Development Index (X1) decreased to 0.25 (see Table 1). Natural disasters were another negative contributory factor to the regional integration process of Central America. Guatemala, Nicaragua, and El Salvador were hit by massive earthquakes in 1976, 1978 and 1979 respectively. These earthquakes generated a higher social and economic cost for these three countries in the 1970's.

In this decade all Regional Global Development Indexes (Xi) for CACM were located in the under developed stage or level 1. The Regional Global Development (RGD) index was 0.07 compared to 0.13 in the 1960's. Obviously there was a contraction in the regional integration process of Central America in the 1970's (see Table 1 and Graph 8). Also, in the 1970's the RIS index for Central America was 0.25. This constitutes a shift from developing stage in the 1960's to under-developed stage in the regional integration process of CACM (see Table 1 and Graph 9).

4.3. Crisis in Central American Regional Integration in the 1980's

In the 1980's Central America experienced difficult times with armed conflicts and political crisis that affected major parts of the countries in the region. This decade was even referred to as "the lost decade" of Central America by many social scientists. In this decade, major Central American countries were governed by military governments. Armed conflicts were widespread between revolutionary groups²¹ and armed forces²² led by groups of dictators from the military cupolas. The latter justified their rule on the pretext to contain the advances of communism following (the cold war between capitalism and socialist ideologies). Three Central American countries that suffered from armed conflicts were Guatemala, El Salvador, and Nicaragua.

The crisis that started at the end of the 1970's and lasted till the middle of the 1990's, brought negative social and economic impacts to this region. The CACM then witnessed higher inflation rates, higher unemployment rates, higher level of poverty (because population growth was bigger than the total output growth) and especially higher per-capita income losses compared other periods (1950's and 1960's). Guatemala, El Salvador, and Nicaragua were especially badly hit by the crisis. The decline of Regional Global Political Development Index (X1) to 0.07 (see Table 1) was a testimony to the crisis. Another testimony to the crisis was the severe decline of the Regional Global Economic Development Index (X3) to 0.15 (see Table 1). As a result of the widespread economic, social and political problems, the import volume contracted and

²¹ In Guatemala with the URNG (Union Revolucionaria Nacional Guatemalteca); Nicaragua with the FMLN (Frente Sandinista de Liberacion Nacional); El Salvador FMLN (Frente Faraundo Martin de Liberacion Nacional); trained by personnel from Cuba, Eastern Europe, and the ex-Soviet Union.

²² Guatemala, El Salvador and Nicaragua armies were supported by the U.S. Government.

caused decline of the Regional Global Technological Development Index (X4) decline to 0.10 (see Table 1).

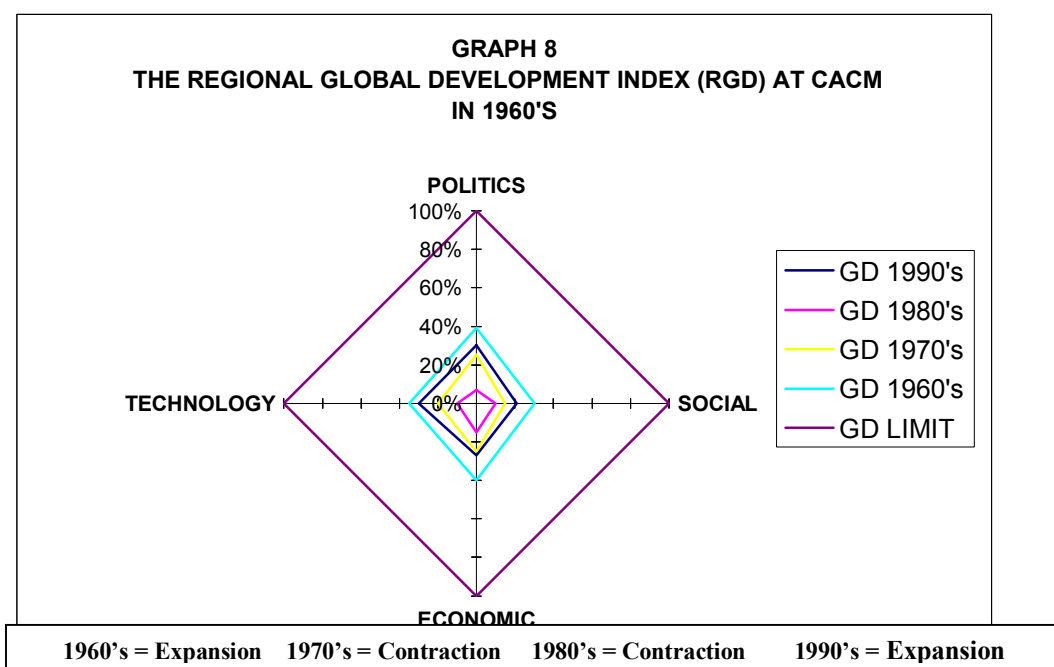
4.4. Emerging Stage of the Central American Regional Integration in the 1990's

In the 1990's, the major Central American countries made significant progress towards stability. A notable improvement in the democratic process and human rights aspect were made by Nicaragua (1991), El Salvador (1992), and Guatemala (1996). The Regional Global Political Development Index (X1) of 0.30 testified the improvement in the political situation in Central American countries. The 1990's were a new era for Central American countries. The Esquipulas Meeting among Central American countries in 1986 created a bigger impact in the evolution of CACM and its continued integration. In this period all Central American countries recognized that economic integration is an important mechanism which can bring more negotiation power to this region in the new world trade context. (Fernandez, 1986).

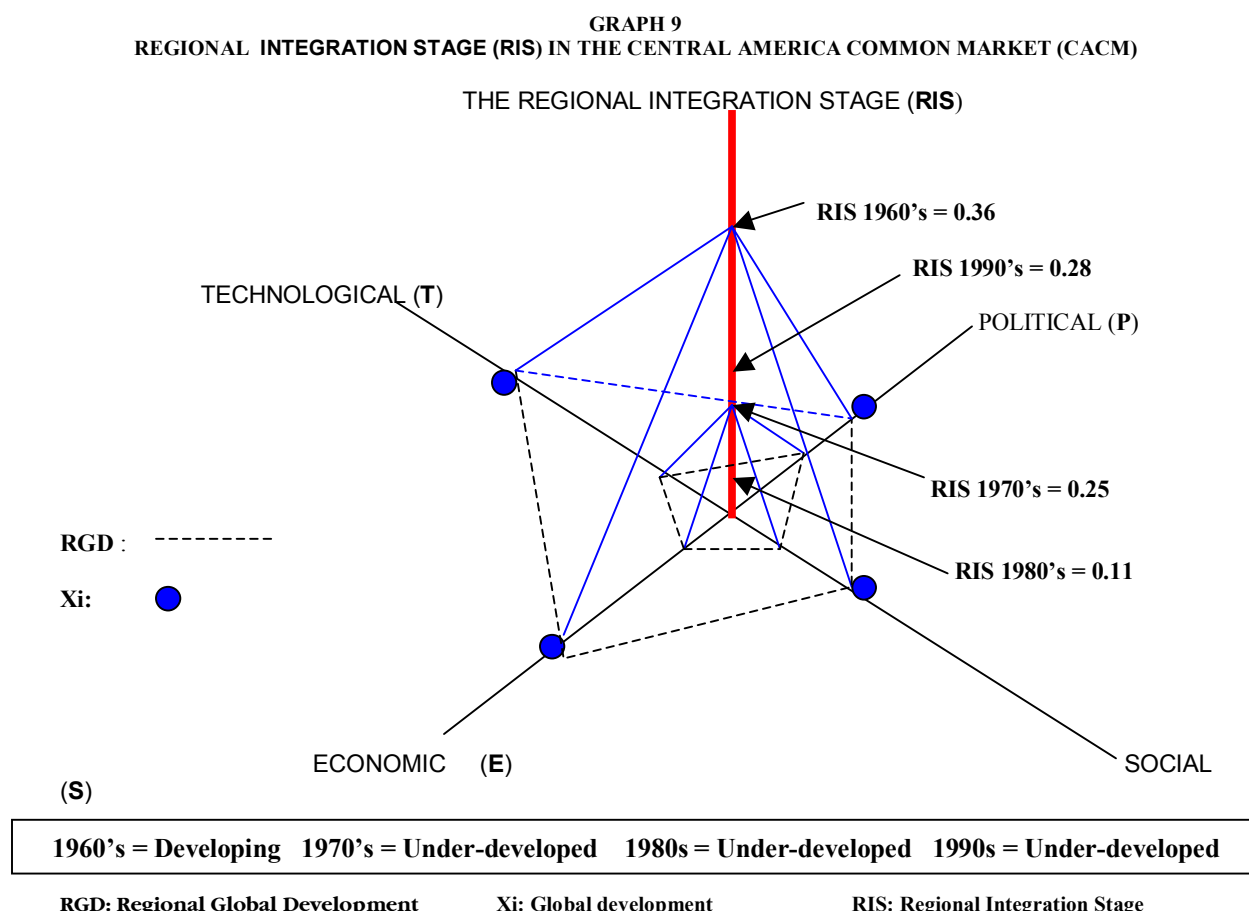
For sometime in the 1990's, Central America remained in a fragile and unchanged production structure. Many Central America countries' production and trade structures continued to depend on traditional agriculture export products with low added value. Nevertheless, there was improvement in the major Central America countries in the economic area. This improvement was reflected in the increased Regional Global Economic Development Index (X3) of 0.27 (see Table 1). The economic recovery of Guatemala, El Salvador, and Costa Rica was an important factor that generated increased import volume of technology in this region. This is clearly discernible from the Regional Global Technological Development Index (X4) of 0.30 (see Table 1).

In this decade, Central American countries saw some improvement in the Regional Global Development Indexes (Xi). However these improved indexes were not comparable to those in the 1960's. Meanwhile, the Regional Global Development (RGD) index increased to 0.09 (see Table 1 and Graph 8). This is an expansion compared to the 1970's and the 1980's. However, the RGD index and RIS index of the 1990's were lower than those of the 1960's due to the introduction of a new scheme of regionalism. Called new regionalism or open regionalism, this scheme is based on the individual countries' negotiation of trade and investment liberalization agreements. The open regionalism actually changed the original CACM framework of the 1960's.

The Regional Integration Stage (RIS) index, which was located at 0.28, clearly mirrors the decline in the RGD index and RIS index. The RIS index continued to be under- developed stage for sometime in the 1990's (see Table 1 and Graph 9). In this decade, each Central American country experienced prolonged economic structural problems and different socio-economic development stages. The five major countries in Central America also experienced common social problems. Consequently, the Regional Global Social Development Index (X2) for these countries in the 1990's persisted at 0.21(see Table 1), which is the lowest compared to those of the previous three decades. The minimum willingness of different social groups in these countries to address social issues was a major contributory factor to the persistent social problems.



Source: design and calculus by the author.



5. Application of the GDRI-Model to Different Trade Blocs

The GDRI-Model can be also applied to different trade blocs in different regions around the world. The trade blocs under study in this research paper are European Union (EU), North American Free Trade Area (NAFTA), Association of Southeast Asian Nations (ASEAN-5), Market of the South Cone (MERCOSUR) and Andean Community (AC). The two periods identified in the application of GDRI-Model are the 1980's and the 1990's.

5.1. European Union (EU): Advanced Regional Integration Development

The regional integration of EU is based on the old or closed regionalism. The closed regionalism in EU generated highest level of Regional Global Development Indexes (Xi) by area (political, social, economic and technological). The result of the Regional Global Political Development Index (X1) was 0.75 and the Regional Global Social Development Index (X2) was 0.70 (see Table 1). These two results locate EU in the top position of regional integration development stage in the world (see Table 1 and Graph 10). Meanwhile, the Regional Global Economic Development Index (X3) and Regional Global Technological Development Index (X4) were 0.68 and 0.65 respectively (see Table 1). The X3 and X4 were located in the developed stage, but not in the same level as the Regional Global Political Development (X1) and Regional Global Social Development (X2). While the RGD index of the EU in the 1980's was 0.48. The RGD of the same trade bloc in the 1990's was 0.72. The RGD index in 1990s was located in the developed stage, as shown in graph 10 and table 1.

In the 1990's all Regional Global Development Indexes (Xi) of EU (politics, social, economic, and technology) present a stronger growth. The Regional Global Political Development Index (X1) and Regional Global Social Development Index (X2) present the highest value ever of 0.90 and 0.80 respectively (see Table 1). The RIS index in the 1990's is located in the developed stage of 0.85 (see Graph 10). It is clear that the strong Regional Global Development Indexes (Xi) in EU are the Regional Global Political Development Index (X1) and the Regional Global Social Development Index (X2). The Regional Global Economic Development Index (X3) and Global Technological Development Index (X4) present positive advances of 0.80 and 0.85 respectively (see Table 1). The EU scheme proves that if each member in the same region presents strong Regional Global Development Indexes (Xi) in each area (political, social, economic, and technological), then the regionalism can be successful. At the same time, the successful regionalism can generate expansion of the Regional Global Development Indexes (Xi) in each member.

5.2. NAFTA: Constant Regional Integration Development

Unlike the EU, the North America Free Trade Area (NAFTA) applies the open regionalism scheme. The open regionalism scheme (Free Trade Areas –FTA-). The Regional Global Development in NAFTA in the 1980's saw a high Global Economic Development Index (X3). X3 is located in the developed stage with the value of 0.75 (see Table 1). X3 of NAFTA is a higher value compared to the rest of the Global Development Indexes (Xi) of other areas: political, social and technological global development indexes.

The Regional Global Technological Development Index (X4) was in the development stage of 0.65 (see Table 1). The Regional Global Political Development Index (X1) and Regional Global Social Development Index (X2) have lower results of 0.55 and 0.45 respectively (see Table 1). While the Regional Global Development (RGD) index in NAFTA in the 1980's is 0.38, the same in the 1990's experienced an expansion to the level of 0.51. Meanwhile the Regional Integration Stage (RIS) index in the 1980s and the 1990s are both located in the developing stage with the value of 0.62 and 0.60 respectively (see Graph 10).

In the 1990's the favorable conditions requesting from the improvement of Global Development of Mexico made it possible to join NAFTA. The Regional Global Political Development Index (X1) of NAFTA was 0.67 and the Regional Global Economic Development Index (X3) of NAFTA was 0.85. X1 moved from developing stage to developed stage, the Regional Global Social Development Index (X2) in the 1990's a rise compared to 0.60, but continued to be in the under developing stage. The Regional Global Technological Development Index (X4) also observed an expansion to 0.75 (see Table 1). The improvement of Xi originated mainly from a strong Regional Global Economic Development (X3).

5.3. ASEAN: Slow Regional Integration Development

The following are the results of the Regional Global Development Indexes (Xi) by area in the Association of Southeast Asian Nations (ASEAN) in the 1980's: Regional Global Political Development Index (X1) was in the under-developed stage of 0.25; Regional Global Social Development Index (X2) was in the under-developed stage of 0.20; Regional Global Economic Development (X3) was in the under-developed stage of 0.30 and the Regional Global Technological Development (X4) was located in the under-developed stage of 0.20 (see Table 1). The low Regional Global Development Indexes (Xi) by area in the ASEAN originated from the different levels of Global Development in all member countries. There was a large gap in the Global Development among most ASEAN members.

However, in the 1990's the Regional Global Political Development Index (X1) of ASEAN was expanded to 0.35 (see Table 1). X1 was located in the developing stage. The Regional Global Social Development Index (X2) maintained a low rate of 0.25. X2 is in the under-developed stage. It is important to note that in the 1990s, the financial crisis of 1997 affected several ASEAN members; especially Indonesia, Thailand and Malaysia. In fact, the financial crisis in these three countries affected the Regional Global Economic Development Index (X3) of ASEAN in the 1990's, it was located in the under-developed stage of 0.25 (see Table 1). The Regional Global Technological Development Index (X4) also received a negative impact; with the value of 0.11. It was in the under-developed stage. Comparing RGD index in the 1980's to that in the 1990's, there was a rise from 0.06 to 0.11. This put the RGD Index in the 1990s in the expansion stage. The RIS index in the 1980's was located in the under-developed stage with 0.21, but with the value of 0.24 in the 1990's. It is to be in the under-developed stage (see Graph 10).

From the above, it can be observed that the major factor that contributed to the improvement of the Global Development Index (Xi) of ASEAN is the improvement of the Regional Global Political Development (X1).

5.4. Andean Community (AC): Stagnation of Regional Integration Development

The regional integration process of Andean Community (AC) in the 1980's saw a RGD index result of 0.01. But the RGD index in 1990s expanded to 0.10 (see Table 1). The Xi indexes by area in the 1980's are as follows: Regional Global Political Development Index (X1) in the under-developed stage with the value of 0.11; Regional Global Social Development Index (X2) in the under-developed stage of 0.15; Regional Global Economic Development Index (X3) in the under-developed stage of 0.15 and Regional Global Technological Development Index (X4) in the under-developed stage of 0.06 (see Table 1). The origin of these low results, especially in the Regional Global Economic Development (X3) was a high inflation, depreciation of the exchange rates and large external debts in the major part of AC members.

The low level of Regional Global Economic Development (X3) in the 1980's prompted the international financial agencies (i.e. the International Monetary Fund –IMF- and the World Bank -WB-) to initiate alternative economic development model. The alternative development model recommended by these international financial agencies is based on a structural adjustment program. This structural adjustment program was applied in the major part of the Latin American countries during the 1980's. The general objective of this program was to promote the free market concept by following three measures. The first measure is the privatization of public enterprises focused on the sell of public services (communications, electricity and transportation). The second measure is the implementation of free trade policy based on free trade bilateral agreements that are oriented to the export-led growth. (The export-led growth changes the traditional

regionalism scheme²³ that was adopted by Caribbean, Central America and South America in the 1960's and the 1970's. The traditional regional integration scheme in all Latin America was based on the closed regionalism model or Customs Union). The third measure is the reduction of the government size. These three measures are able to generate economic and social developments in this region.

In the 1990's the regional integration process in the Andean Community (AC) member countries present better panorama. This is observed in the Regional Integration Stage (RIS) index of 0.10. The Regional Political Global Development Index (X1) experienced better conditions with the value of 0.35. Which is located in the developing stage (see table 1). The improvement of X1 is a consequence originated by the democratic process in the major AC member countries. The Regional Global Social Development Index (X2) increase to 0.20, and continued to be in the under-developed stage. The low stage of X2 was due to the reduction in the number and budget of social welfare programs, especially in education and health programs. The low level of X2 is a common factor in all trade blocs in Latin America, resulting from the high rates of poverty and social problems in the region till today.

The improvement of Regional Global Development Indexes (Xi) in AC is originated by the Regional Global Economic Development (X3) in trade blocs such as NAFTA, MERCOSUR and CACM. The RGD index in the 1990's experienced an expansion to reach the level of 0.10. In conclusion in the 1980's a large number of trade blocs in Latin America, especially MERCOSUR, CACM and AC encountered many obstacles in their respective regional integration processes. The regional integration of Latin America in the 1980's can be called "The Latin America Regional Integration Recession Period."

5.5. MERCOSUR: Fast Regional Integration Development

The Market of the South Cone (MERCOSUR) followed the NAFTA regional integration scheme (New Regionalism). The RGD index of MERCOSUR in the 1980's was 0.08, but in the 1990's the RGD expanded to 0.15. The Regional Global Development Indexes (Xi) by area of MERCOSUR in the 1980's exhibited these results: the Regional Global Political Development Index (X1) was in the under-developed stage of 0.18; Regional Global Social Development Index (X2) was in the under-developed stage with a value of 0.25; Regional Global Economic Development Index (X3) was located in the under-developed stage of 0.30 and Regional Global Technological Development Index (X4) was in the under-developed stage with the value of 0.20 (see Table 1). It could be observed that X1 in the 1980's was weak and non-stable. The lower value of X1 in the 1980's originated from military governments led by dictators and copula military groups.

²³ The Latin America regional integration concept change dramatically in the 1980's. It is moved from closed regionalism (Custom Union scheme) to open regionalism scheme (Free Trade Areas scheme) (Deardorff, 1994).

In the 1990's, the Regional Global Development (RGD) index reached 0.15. This is an expansion compare to RGD of the 1980's (see Table 1). The Regional Integration Stage (RIS) attained the value of 0.39 (see Graph 10). Therefore, RIS in the 1990's was located in the developing stage. The better results of the RGD index and RIS index in the 1990's originated from the improved Regional Global Political Development Index (X1) of 0.35, which located in the developing stage. However, the Regional Global Social Development Index (X2) was in the under-developed stage with a value of 0.27. Regional Global Economic Development Index (X3) moved to the developing stage of 0.50. Meanwhile Regional Global Technological Development Index (X4) was in the under-developed stage with a value of 0.30 (see Table 1).

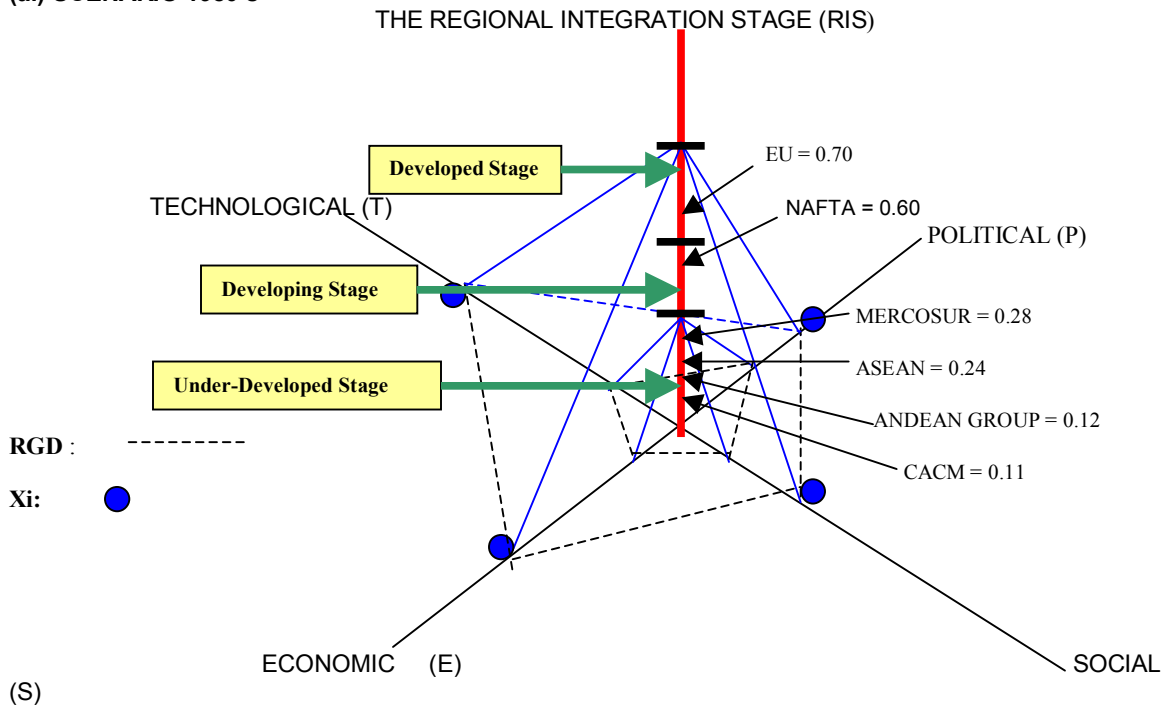
Two basic factors that led to the formation of MERCOSUR are: (i) better conditions in the external debt and stable exchange rate in Argentina in the 1990's. (ii) the strengthening of democracy in the 1990's (Democracy is a decisive factor that consolidated the formation of MERCOSUR).

Two main reasons for the improvement of the Regional Global Economic Development Index (X3) among MERCOSUR members in the 1990's were the privatization of public enterprises coupled with the attraction and greater dynamism of Foreign Direct Investment (FDI). Countries of MERCOSUR encouraged the transfer of technology which gave then a greater dynamism in their market. Transfer of technology also permitted a higher competitiveness and greater productivity among MERCOSUR members.

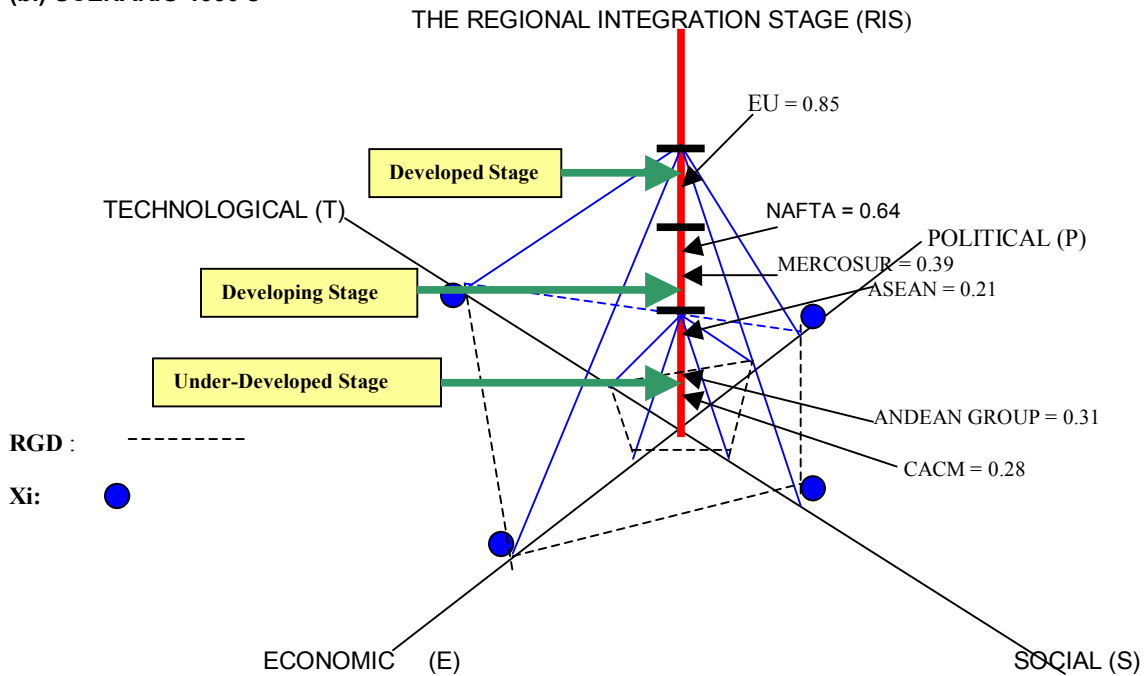
Comparing MERCOSUR with Central America Common Market (CACM) and Andean Community (AC) in the 1990's, MERCOSUR can be considered the leader of the regional integration process of Latin America. It can be concluded that MERCOSUR has the higher Regional Global Development Indexes (Xi) value compare to the rest of trade blocs in Latin America (e.g. CACM and AC). Especially, MERCOSUR in the Regional Global Political Development Index (X1) and Regional Global Economic Development Index (X3).

GRAPH 10
REGIONAL INTEGRATION STAGE (RIS) IN DIFFERENT TRADE BLOCS 1980's AND 1990's

(a.) SCENARIO 1980's



(b.) SCENARIO 1990's



5. Concluding Comment

Firstly, this research presents a new definition of regional integration. It defines regional integration as a process to join different domestic system developments (countries) into a single regional system development (trade bloc).

Secondly, this research paper asserts that strong regionalism (e.g. old regionalism or new regionalism) depends on the favorable conditions that Regional Global Development (RGD) offer. The RGD is the combined result of the individual domestic system developments of all or most countries in the same region. At the same time, regionalism can generate growth in the Regional Global Development in all countries (i.e. in all the different domestic system developments) in the same region. If the domestic system development is weak in some or most member countries in the same trade bloc, then regionalism of the trade bloc cannot be successful.

Lastly, this paper maintains that a strong inter-dependency exists between Regional Global Development and Regionalism. This can be observed in the results obtained in the GDRI-Model in different trade blocs (i.e. European Union –EU-, North America Free Trade Area –NAFTA-, Association of Southeast Asian Nations –ASEAN-, Central America Common Market –CACM-, Andean Community –AC-, MERCOSUR).

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