

# On Openness Integration and Economic Growth



Rock-Antoine Mehanna, Ph.D.  
and  
M. Kabir Hassan, Ph.D.



**Bangladesh Institute of Islamic Thought (BIIT)**

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## **Dedication**

**To our beloved parents  
Tanios Shaker Mehanna  
Marguerite Zogheib Mehanna  
Mohammad Abul Kashem  
Moshammad Rahima Khatoon  
To the free spirit and will that have been bestowed upon us.**

## Foreword

The twenty first century is experiencing a fast pace of global integration of national markets even though flow of factors of production, commodities services and intermediates have not been evenly accessed by the countries that were told of the even- handed impacts of globalised economic regime. But the reality has been much different from what the proponents have aggressively put forward in several rounds of negotiations where developing country perspectives were hardly adequately articulated. Thus it is indeed topical to review the economic literature on trade openness and economic growth as market integration takes place. This is the task that Dr. Rock- Antoine Mehanna and Dr. M. Kabir Hassan have undertaken. They have used a framework of analysis now quite common for growth analysis. The advantage of the presentation is a depth of understanding of the writings on growth in early days of economic treatises when growth theory was not fashionable but when logical formulation in a given historical setting was clear and in that sense was contextual. The generalization that followed made many heroic assumptions for keeping within a framework to underscore the importance of a policy or a change in policy. Much have been done to test such theoretical proposition with formal mathematical formulation and statistical investigation. The authors have presented relevant ideas in a simple formulation that would attract serious students of growth and trade relations. For them the book can indeed become a primer. As stated by the authors the gap between theory and empirical evidence remain, despite many recent contribution introducing innovative concepts and ideas.

The authors have undertaken an empirical study to examine the role of trade openness, which causes integration of markets and promotes investment. In this context they have also agreed in favour of a defined simpler and predictable role for the government as a facilitator. The authors have come out clearly as free market proponents and in their own way answered the questions that critics of free trade regime in an unequal world with highly differentiated negotiation capacity to counter non-tariff barriers in developed countries. However, the authors have put their views on the basis of the analytical methodology, which has its advantages and limitations. All said and done I can say without hesitation that it is a readable book, lucidly written and bears the mark of hard labour and clear thinking. For students of growth and trade liberalisation this would be a good introduction to the vast literature that exists in the area. This is a work well done.

**Muzaffer Ahmad**  
Professor, Institute of Business Administration  
Dhaka University

## **Publisher's note**

By the time the world is moving fast to reach the goal of globalization. The people at different corners of the globe are reacting differently. While it was hoped that globalization would bring about progress and prosperity to even out the differences among the nations at different pace of development, but the symptoms seem to be otherwise frustrating the expectation and it is now almost set to fail to narrow the gap between income and social inequalities among different nations. The reactions of the demonstrators in Italy and Seattle expose the gloomy future of the globalisation. No effort seems to be directed to cool down this complicated issue, which has been dealt with in this book in its diverse aspects. The authors have examined the syndrome empirically to demonstrate the role of trade openness in the integration of markets World over to promote investment on a global scale.

We are happy to able to publish this book from BIIT. It is expected that the economists, businessmen and industrialists will find worth reading this book.

May Allah accept this effort in the way of emancipation of the human spirit and sustainable growth and development.

Dhaka, 2003

**M. Zohurul Islam, FCA**  
Secretary General, BIIT

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# I. INTRODUCTION

At the dawn of the twenty-first century, the pace of globalization has already reached high record but the challenges to stop this momentum are also increasing. This globalization is described by the fact that the world is open like never before through the freer flow of labor, goods, services, capital, information, and technology transfer. However, this globalization syndrome, for instance, did not narrow the gap between income inequalities, neither did it calm down the worries of environmentalists and labor unions, to say the least. This era of increased openness has created a wealth of opportunities as well as threats. The stakes are high but the returns could be more rewarding.

## I.A. THE PROBLEM AND ITS SETTING

The subject of this study is economic growth and development of countries. This study examines the impact of trade openness, different levels of integration, and stability on economic growth per individual across countries. It uses the new growth framework that combines features from the neoclassical as well as from the endogenous models. The problem under study is how to increase the long-term economic growth per capita. This problem is divided into three sub-problems: 1) Does trade openness stimulate economic growth per capita? 2) Does a deeper regional integration enhance growth? 3) Does stability, as initiated by government political, economic, and financial policies, promote steady-state growth?

One of the most important questions in macroeconomics is what does create the wealth of nations, a question that goes back to the days of Thomas Mun (1571-1641) and his *mercantilist* view, which explained the nation's wealth through selling other countries more than you buy from them. Later, Francois Quesnay (1694-1774) preached his *physiocratic* ideas that focused on the accumulation of raw materials instead of gold as the mean for wealth creation. Then, Adam Smith (1776) introduced his seminal work *The Wealth of Nations* stressing on the free market system and the increased specialization of labor and production that would create natural and absolute advantages for nations. David Ricardo (1817) expanded Smith's ideas to the *comparative advantage* of nations, a concept

that describes the relative advantage of nations by producing what they are best in and buying the rest from others. Much later, Frank Ramsey (1928), Allyn Young (1928), Joseph Schumpeter (1934), and Frank Knight (1944) among others also provided additional contributions to the field of growth and development.

Those previous eminent thinkers, especially the classical ones since Adam Smith, laid the basic foundations of modern economic growth theories. These foundation blocks included the competitive market system and its equilibrium dynamics, the increased specialization of labor and production, the concept of diminishing returns in relation to capital and labor, the role of population growth with per capita income, the forms of technological progress and its relation with specialization, new ideas, and monopoly power.

Another set of ingredients more related to the modern growth theory was also added by Ramsey (1928) and his development of the utility function and the concept of consumer optimization. Later, Harrod (1939) and Domar (1946) treated the growth theory with their production functions and inputs' substitutability to argue that government intervention in the markets is necessary to stabilize the free market system.

However, modern growth theories marked a strong debut with Solow (1956) and Swan (1956) through their *neoclassical-growth* framework, a model built on the assumptions of constant returns to scale and diminishing returns to capital. Neoclassical models introduced the conditional convergence hypothesis—the lower the initial level of per capita GDP, relative to the steady-state position, the faster is the growth rate, and this hypothesis was empirically treated in recent years and is still creating a lot of controversy as to its regularity in different settings. Solow's (1956) and Swan's (1956) works indicated the absence of continuing technological improvement, a feature that is reflected in their assumption of diminishing returns to capital. However, this feature of diminishing growth rate appeared to be an unrealistic setting, known the fact that growth rates can persist in increasing over a long period of time. Accordingly, neoclassical theorists of the late 1950s and 1960s assumed an exogenous technological progress to avoid this deficiency.

Cass (1965) and Koopmans (1965) provided the neoclassical model by treating the saving rate as endogenous while keeping the technological progress as exogenous. Arrow (1962) and Sheshinski (1967) developed models of learning-by-doing, where the creation of new ideas, which are treated as partly nonrival public goods of production and investment, spillover to the entire economy. However, the deficiency of exogenous technological progress remained.

The period ranging from the late-1960s until the late 1980s remarked an era of stagnation and no evolvment in the field of growth economics. It was not until Romer (1986) that the field acquired a new momentum of empirical research. Romer (1986), Lucas (1988), and Rebelo (1991) built on the work of Arrow (1962) and Sheshinski (1967) *endogenous-growth* models, which indicate that growth can grow indefinitely once human capital is included as an endogenous factor. This endogeneity would shift the technological progress from exogenous to endogenous, thus negating the necessity of diminishing returns.

Endogenous models were also developed to incorporate theories of R&D (research and development) and imperfect competition (Romer, 1987; 1990). Moreover, Aghion and Howitt (1992) and Grossman and Helpman (1991) added to these models of technological progress a purposive R&D factor that can be rewarded by the expected future power of a monopoly. However, the growth rate tended not to be Pareto optimal—a process that allows the best allocation of resources and contends that no better position can be attained without reducing the benefit of the other factors—because of government intervention.

The new growth model, used in this study, is derived from the major avenues: neoclassical and endogenous. Nevertheless, this model relies more on the older neoclassical theory. Barro and Sala-i-Martin (1995, 1997) extended these new models by incorporating models of the diffusion of technology to predict the conditional convergence feature. Further, they developed their models to include other aspects of the economy such as government policies.

## **I.B. PURPOSE OF THE STUDY**

The purpose of this study is to identify the impact of trade openness, regionalism, and government role on long-term per capita economic growth across countries. Consequently, it attempts to answer the following questions: 1) To what extent does the broader role of openness affect long-run economic growth? 2) Does regional integration have a net positive impact on long-run growth? 3) Does a deeper level of integration generate greater welfare? 4) In what kind of environmental setting does integration work more efficiently? 5) To what extent do political, macroeconomic, and financial stabilities affect growth? 6) How much does stability cover the broad role of government and its explanatory impact on welfare?

This may be one of the first empirical studies to examine the impact of different levels of regional integration using the new growth framework where government policies—as represented by economic, political, and financial stabilities—become a main catalyst for sick or ill outcomes of long-run economic growth. This study will assess various kinds of economic integration in four different regions (North America, South America, Southeast Asia, and Europe) and their effects on long-run growth by using the new growth model. Other regions such as the Middle East and Africa were left out of the sample due to several exogenous or endogenous factors that are beyond the scope of this study.

This model is derived from the older neoclassical as well as from the more recent endogenous theories, and is synthesized and developed by Barro (1997). Its extension is reflected through the incorporation of government policies, accumulation of human capital, fertility decisions, and diffusion of technology. This work will endeavor a new extension of the new growth model so it will include a broader and simpler role of government.

## **I.C. SIGNIFICANCE AND CONTRIBUTION**

The significance of this work lies in the ongoing quest for identifying the determinants of long-run economic growth for cities, regions, and countries. This quest has been revived over a decade ago by working deeper on reconciling empirical evidence with theory. Governments and their different layers, nongovernmental

organizations (NGOs), international development agencies, and Bretton Woods institutions (World Bank, IMF, GATT/WTO, etc.) are increasingly interested in the problem of improving welfare and attaining sustainable long-run economic growth, especially in less-developed or developing countries.

Nowadays, a large volume of research is centered on growth. In fact, recent empirical studies have been dealing with several substantive questions such as the consistency of convergence hypothesis, the role of government and market distortions, the diffusion of technology, the temporal causality between investment and growth, the impact of population growth and its significance, the interplay between women's education, fertility and health, the endogeneity of environment, and so on.

The most urgent need for rational governments is to attain sustainable growth in this new world order, better known as the *global village*, thus improving their citizens' welfare. This growth is best measured, so far, by the growth rate of income per capita—growth rate of per capita gross domestic product (GDP). Past and recent work showed that this growth rate could be affected by a broad spectrum of determinants.

More interestingly, some recent studies attempted to broaden the definition of economic growth and development to include some non-traditional aspects. For instance, the 1998 Nobel Laureate Amartya Sen (1999) argued in his seminal work that freedom is a crucial component of economic welfare and a germane source of economic development. Alternatively, Charles Kenny (1999) examined the link between growth and happiness and argued that increases in absolute income have little effect on happiness in rich countries. However, within the context of this empirical study, the primary goal of governments is long-run economic growth best measured by the growth rate of income per capita.

Despite the large volume of research, still the theory of economic growth has not reached enough clarity in many aspects. In fact, empirical studies have been revived only a decade ago attempting to narrow the gap between empirical evidence and theoretical thinking. However, debates between free traders and protectionists, advocates and opponents of multilateral and regional

trading arrangements (RTA), and so forth are still fueling the field with creativity and rigor.

Contrary to the consensus among major economists that regional integration or RTA creates trade diversion, generates long-run global loss, and reduces optimal efficiency of resources, it is argued in this research that regional integration could be Pareto superior, could have a long-run net gain regardless of trade effects, might enhance structural changes in the economy, can establish or make use of comparative and competitive advantages, would increase international competition, and could generate positive net spillovers.

This study attempts to integrate openness—as replacing the traditional role of investment—in growth regressions, and as a basic element for open economies. In addition, it uses an extended version of the “new growth” model to estimate the impact of different levels of regional integration on a well-representative sample of countries belonging to the world major integration models. And last but not least, this work offers a broader, clearer, and simpler role of government as reflected by a politico-economic-financial stability concept.

## **I.D. DEFINITION OF TERMS**

Within this context, regional integration, regional trading arrangements (RTA), and regionalism are used interdependently and they describe the process of when country members have a different trade arrangement (e.g. lower tariff) between them as compared to the rest of the world. Such preferential arrangements could involve one or more aspects, such as lowering or eliminating tariff or non-tariff barriers (like quotas, voluntary export restraints, etc.), freer flow of labor and capital, and so on. Further, the framework of this study identifies government policies in terms of what governments do or not do to affect factors such as competition, market distortions, property rights, rule of law, consumption, debt, and so forth. Moreover, the term “openness” implies trade openness, and is used interdependently with trade liberalization and freer trade, which indicate the elimination or reduction of tariff and/or non-tariff barriers. The term “growth” indicates economic growth and is used

to describe the growth rate of real GDP per capita or income per head, while the term “stability” reflects the broad role of government in maintaining or providing political, financial, and economic stability.

## **I.E. PLAN OF THE STUDY**

The plan of this study is described as follows. This current chapter starts with an overview of the trends in the subject of economic growth and development, and discusses the motivation behind this study. Chapter one also defines the problem, presents the purpose and the significance of this work. Then, it includes the contribution to the field followed by the study plan. The final section summarizes the chapter.

Chapter two is the literature review of the study. First, it synthesizes the modern theories of economic growth including the two major avenues of neoclassical and endogenous models, and presents the recent new growth model. Second, it examines the involvement of determinants of growth, major findings, and contributions. Third, it identifies the gap in the literature. Last, it summarizes the chapter.

Chapter three is the methodology. First, it introduces the design and the sample. Second, it presents the model form and function followed by the hypotheses. Third, it discusses the independent variables. The fourth section deals with data collection and measurements, while the last section summarizes the chapter.

Chapter four is the empirical analysis. This chapter analyzes the econometric regression results of the tests and presents them in figures and tables. A summary of the chapter is also provided. Finally, chapter five concludes the study with a summary, conclusions, policy implications, and suggestions for further research.

## **I.F. SUMMARY**

This chapter introduces an overview of the subject of economic growth and development by building a rational historical evolution of the field. Then, it presents the purpose of this study, which is the impact of trade openness, regional integration, and government policies on long-run economic growth. This research uses an

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extended version of the modern growth model, which incorporates features of the neoclassical as well as the endogenous models. This extended model follows Barro's (1997) approach. Also the significance of this study is clearly shown through the increasingly interest of cities, countries, and international institutions in the yet partly inconclusive answer of what determines long-run economic growth.

The first contribution of this study is an attempt to refute the traditional role of investment (by arguing in favor of its reverse causation) and replace it with trade openness as a main determinant of growth in open economies. The second contribution is to estimate the impact of different degrees of integration by using the new extended growth model on a well-representative panel. The third contribution (and maybe the most significant one) is to identify a broader and simpler role of government in growth regressions. The chapter ends with a study plan section that lays out the map of the study.



## II. LITERATURE REVIEW

This chapter presents the modern theories of economic growth by focusing on the two major realms: the neoclassical and the endogenous models, in addition to offering the new growth model, which is adopted in this study. Further, it examines the evolvement of sources of growth, and synthesizes major findings and contributions. Then, this chapter offers the opportunity to identify the gap in the literature pertinent to this research.

### II. A. NEOCLASSICAL MODELS

The neoclassical growth theory started to take its formal shape with the work of Frank Ramsey (1928) who developed the consumer optimization and its utility function, which allowed Harrod (1939) and Domar (1946) to integrate some Keynesian aspects to the theory. Such aspects were reflected in the substitutability of inputs in their functions, allowing them to argue that government intervention is necessary to provide stability to the free market system.

Solow (1956) and Swan (1956) introduced the initial formal shape of the neoclassical model. They built the production functions on the basic assumptions of constant returns to scale, diminishing return to input (convex shaped-curve)—whether capital or labor, positive elasticity of substitution between inputs, and constant exogenous saving rate. The major contribution of the Solow-Swan model was the convergence property, which is derived from the diminishing returns to input aspect. The absolute convergence is described by the lower the initial level of real per capita GDP, the higher is the growth rate, i.e. poorer countries tend to grow faster than richer ones. This convergence hypothesis is still attracting a lot of research interest due to its inconclusive theoretical irregularities (whether absolute or conditional). However, empirical evidence showed its regularity in some samples (like OECD), while on a more diversified cross-country sample, it failed to do so.

Cass (1965) and Koopmans (1965) provided an endogenous instead of an exogenous saving rate into the neoclassical model based on Ramsey's consumer optimization functions. Arrow (1962) and Sheshinski (1967) introduced models of learning-by-doing using ideas as partial nonrival public goods, acting as by-products of

production and investment. However, the two main deficiencies—convergence and convexity—of the neoclassical model remained.

Recent empirical studies argued that this convergence is not absolute but instead it is *conditional*, which is relative to the long run or steady-state position. In particular, Barro and Sala-i-Martin (1997) argued that this conditional convergence could occur through the use of the technology of diffusion models, whereas follower (poorer) countries can catch up with leaders (richer) ones by imitating their technological innovations. Noting that when imitation is cheaper than innovation (which is usually the case), the process of conditional convergence becomes plausible. Further, this conditional convergence is affected by other factors, thus it can occur once we hold other variables constant. This makes an argument that the absolute convergence deficiency is being restored by the conditional convergence.

Neoclassical models are mainly known by their convexity feature (convex shaped-curve), which is derived from the assumption of diminishing returns to capital, implying that growth cannot continually persist in increasing. This would explain an exogenous role of technological progress that drives growth from outside the model. But, this growth convexity contradicts with historical evidence in many countries such as the US, Canada, and so forth.

Lucas (1988), Rebelo (1991), Caballe and Santos (1993), Mulligan and Sala-i-Martin (1993), and Barro and Sala-i-Martin (1995) extended the element of capital (usually perceived as physical capital) within the neoclassical framework to include human capital in the forms of education, health, and experience. However, the absence of continuous improvements in per capita growth was still not restored due to the assumption of diminishing returns to even the broader capital (physical and human). Later, endogenous models attempted to restore this second deficiency.

## II. B. ENDOGENOUS MODELS

Arrow (1962) and Sheshinsky (1967) developed models of learning-by-doing, which presented the creation of ideas as nonrival goods where everybody in the economy can benefit from their assumed instant diffusion. Romer (1986), Lucas (1988), and Rebelo

(1991) built on the work of Arrow and Sheshinsky and constructed the first endogenous growth models where human capital becomes endogenous and growth may continue to improve because the returns to investment in this broader capital element do not necessarily diminish. This non-convexity feature provided endogenous models with an edge over their neoclassical counterparts.

Romer (1987, 1990) incorporated theories of R&D and imperfect competition (where the marginal cost of production is greater than zero) into the growth theories. Aghion and Howitt (1992) and Grossman and Helpman (1991) extended Romer's work to include that theories of R&D could be purposively induced in order to reap the economic profits that a future monopoly situation could provide. In this framework, growth tends not to be Pareto optimal because it depends on government role in taxation, regulation, investment allocation, tariff policies, and so on.

Although the endogenous model restored the neoclassical problem of convexity (by developing a framework of endogenous role of human capital that would not necessarily require long-run growth to diminish), it was unable to predict the convergence property. This property is strongly supported by empirical evidence in many settings i.e. OECD countries.

## **II.C. NEW GROWTH MODELS**

The previous discussion indicated that both neoclassical and endogenous models still have a major shortcoming in predicting continuous long-run growth in the former, and convergence in the latter. Barro and Sala-i-Martin (1997) extended such models to involve the diffusion of technology in an attempt to restore the conditional convergence property. The concept of technological diffusion describes a process in which poorer countries (followers) grow faster than richer ones (leaders) by imitating their technological innovations—imitation usually costs less than innovation—and holding everything else constant. This new behavior of convergence falls under the neoclassical avenue.

Subsequently, the major contribution of Barro and Sala-i-Martin (1997) in developing the new growth model was reflected through a framework that combines the long-run growth of the endogenous

models (from the discovery of ideas in the rich developed economies) with the convergence property of the neoclassical growth theories (from the gradual imitation by followers). Interestingly, the majority of extensions pertaining to the new growth model, such as government policies, human capital, and technological diffusion, were mostly inspired from the older neoclassical framework rather than from the more recent endogenous one (Barro, 1997). As a reminder, this study uses this new growth model to estimate the impact of openness, regional integration, and stability on growth across countries.

## **II.D. SOURCES OF GROWTH**

### **II.D.1. PHYSICAL CAPITAL**

One of the major sources of long-run economic growth is the accumulation of physical capital (gross investment less depreciation) as developed by the Ramsey and Solow-Swan models. In fact, the neoclassical models of the late 1950s presented growth as a function of physical capital, natural resources, and labor. These models later incorporated natural resources in (physical) capital and worked on explaining growth rate per capita (or per labor), thus ruling out the separate role of the labor variable. Using physical capital data is too cumbersome and unreliable since many countries, especially developing ones, have arbitrary and inaccurate measures of depreciation and investment stocks. Thus, per capita GDP (income) is used as a reliable proxy for physical capital that includes natural resources per worker. Further, income per capita can be helpful in determining the level of development of different countries allowing an examination of the convergence or divergence pattern that might occur.

The Solow-Swan models predicted the convergence property through estimating the negative causal link between the initial (lagged) per capita GDP (or GNP) and the long-run growth rate. This absolute convergence proved to be deficient due to the lack of its strong empirical evidence. Up until now, the convergence debate still attracts a large volume of controversial research. The later endogenous theories did not clearly explain a pattern of convergence of growth rates. However, empirical evidence in some settings such as the fast growing East Asian countries showed that convergence

does exist and should be theoretically explained. Alternatively, other studies (Barro, 1991; Mankiw, Romer, and Weil, 1992) argued for conditional instead of absolute convergence where other governmental and environmental factors can affect the causality. Later, Barro and Sala-i-Martin (1997) attempted to offer models of technological diffusion that could explain an even stronger conditional convergence from the innovation/imitation perspective.

Most studies under the neoclassical framework suggested an average of 2 percent conditional rate of convergence per year—as the lagged per capita GDP decreases by 1 percent the steady-state growth rate increases by 2 percent—indicating that poorer countries grow 2 percent faster than rich ones, holding other variables constant.

Michelacci and Zaffaroni (2000) examined the convergence hypothesis and found that the 2 percent uniform rate of convergence is the outcome of an underlying parameter of fractional integration strictly between 0.5 and 1. They also found that this is consistent with both time series and cross-sectional recent evidence.

Feenstra (1996) showed that in some endogenous growth models, convergence across countries is explained through trade. But this convergence is actually due to the instrumental international diffusion of knowledge rather than the assumed trade element—in this case trade occurs simultaneously with the diffusion of knowledge. In order to test his hypothesis, he examined the effect of trade on growth in the absence of the international diffusion of knowledge and found that trade in goods can lead to a divergence of growth rates.

Pritchett (1996) argued that instead of converging, per capita income between rich and poor countries are diverging continuously. He showed that the dispersion in incomes among countries between 1960 and 1990 increased by 28 percent, from 0.86 to 1.1, while the ratio of the incomes of the richest to the poorest countries rose by 45 percent just since 1960.

Alternatively, Barro (1997) found in a sample of 114 countries that income inequality (measured by the standard deviation of the log of real per capita GDP) rose from 0.89 in 1960 to 1.14 in 1990. However, he argued that this increased inequality does not reject the

convergence implications of the neoclassical growth model, partly because the predicted convergence is only conditional and partly because the poor tending to grow faster than the rich is not the same as a declining trend in inequality. In particular, this equivalence between the faster growth of poor than rich and the decline in inequality is a fallacy. It is Galton's fallacy as discussed in the growth context by Quah (1993) where he showed that such data would regress towards the mean.<sup>1</sup>

Sala-i-Martin (1996) found a 2 percent rate of convergence per year across regions in the United States (states), Japan (prefectures), and five European nations (regions or provinces). He also demonstrated that the interregional distribution of income in all countries has shrunk over time. Finally, he proposed that the one-sector neoclassical growth model (with no capital mobility or with partial capital mobility) and the model of technological diffusion seem to be the best and strongest frameworks to examine the convergence property.

Quah (1996) assessed several convergence empirics and observed the following. First, the uniform 2 percent rate of convergence could arise for reasons unrelated to the dynamics of economic growth. Second, the usual cross-section (conditional) convergence regressions, time-series techniques, panel data analysis, can be misleading for understanding convergence; a model of polarization in economic growth clarifies those deficiencies. Third, the data show persistence across countries: some evidence supports Baumol's idea of "convergence clubs" (convergence exists within a group of countries with relatively similar level of development—for instance, convergence occurs in the OECD rich club.); some evidence shows divergence (the poor getting poorer, and the rich richer, with the middle class vanishing). Fourth, convergence, unambiguous up to sampling error, is observed across US states.

Galor (1996) explored the three major hypotheses of convergence (conditional, absolute, and club convergence) and suggested that the controversy may be due, in part, to variances in perception developed from economic growth theories. He pointed out that the dominance of the conditional convergence hypothesis is attributed to unfamiliarity with its theoretical non-robustness. He also argued that factors such as capital, income distribution, fertility,

capital market imperfections and externalities should be included in club convergence to make it a more viable hypothesis.

Barro, Mankiw, and Sala-i-Martin (1995) explained convergence using a neoclassical growth model when capital includes human investments. They indicated the slow diminishing returns to capital and the differences in government policies and other variables that could cause variations in steady-state (long-run) positions. They also predicted higher rates of convergence in an open economy.

## **II.D.2. HUMAN CAPITAL**

### **II.D.2.a. EDUCATION**

The accumulation of physical capital is not the only factor that drives economic growth. Literature showed that the accumulation of physical capital explained less than 30 percent of the variations of growth rates across countries (Easterly, Levine, and Pritchett, forthcoming). The remaining 70 percent or more was attributed to the intangible factors that make up the total factor productivity (TFP) growth, which includes human capital. But education may explain up to 25 percent of this 70 percent TFP, thus reducing the hidden factor better known as the “Solow Residual” (i.e. what we can not account for). In this context, education is a major component of human capital, which functions through absorbing knowledge, hence acquiring skills to boost output and innovation.

Lucas (1988), Rebelo (1991), Cabelle and Santos (1993), and Barro and Sala-i-Martin (1995) expanded the concept of capital in the neoclassical theory from physical to human capital. The main forms of human capital are education, health, and experience. They found that human capital takes more time to affect economic growth than physical capital. Thus, the interaction effect between both kinds of capital implies that the growth rate is more sensitive to a country’s starting level of per capita GDP (physical output) the greater is its initial level of human capital. Further, Romer (1986), Lucas (1988), and Rebelo (1991) incorporated human capital in the endogenous models to reflect the spillovers of knowledge, which would assist to avoid the neoclassical tendency of diminishing returns to capital.

Growth literature measured education by the rate of primary, secondary, and higher school enrollment. Other attempts (Barro and

Lee, 1993) used the expected years of school attainment to measure education. For instance, Barro and Lee (1996) evaluated international measures of schooling years to determine quality and quantity of education across countries. They showed a trend towards equal educational opportunities in almost all regions and better schooling opportunities in OECD and centrally planned economies compared to developing countries.

Although these school attainment data started to be used recently by The World Bank, they still lack accuracy due to measurement problems (still both school enrollment and attainment data may seem somehow problematic and unreliable) experienced by different developing countries. Consequently, higher rates of school enrollment or attainment may not stimulate growth if the quality of education is poor, or if some distortions in the labor market affect full potential employment.

Still other researchers used public expenditures on education as a proxy to measure education and quality of education in particular, but this measure did not appear to be robust enough to hold scrutiny. For instance, Beanton and others (1996) reported a lack of causal relationship between public education spending and the quality of education (measured by mathematics test scores) for a sample of 34 countries for 1994-95. They also found no relationship between educational quality and income per capita—implying rich countries do not necessarily have a better quality education.

Most empirical studies reported that male (aged 25 and above) secondary and higher schooling—whether school attainment or enrollment—has the highest positive impact on growth among other measures of education. On the other hand, literature showed that primary and total female education have no direct effect on growth. However, primary education is a prerequisite for secondary and higher schooling, thus its indirect effect could be explained. On the second issue, female education appeared to be more shocking, but several scholars attempted to explain its insignificance or even negative impact.

For instance, Barro and Sala-i-Martin (1995) found that male secondary school attainment is even more substantive than male higher schooling and that total female education has a negative (but



insignificant) effect on growth, while primary total education appeared insignificant. They also explained the gap between male and female education as an adequate measure of backwardness; hence, less female schooling signifies more backwardness and accordingly higher growth potential through the convergence mechanism. In this context, they included the school enrollment variables, which came out individually and jointly insignificant.

Other studies (Schultz, 1989; and Behrman, 1990) indicated that female education is important for other elements of economic development, such as fertility, infant mortality, and political freedom. In particular, they showed that female primary schooling has a significant negative impact on the fertility rate. Further studies (World Bank, 1999) reported that mother/female education reduces child mortality through enabling mothers to raise healthier children.

Kim and Kim (2000) investigated a multi-sector general equilibrium model where education enhances general human capital, which is essential for increasing or maintaining the mobility of workers across industries. They showed that international trade, combined with education, can have a positive growth effect by allowing workers to move easily, and specialize in, the industry with the greatest productivity, thus enabling an improvement in the long-run growth of the economy.

Temple (1999) noted that recent studies found that economic growth appeared to be unrelated to increases in educational attainment. He argued that there is correlation in one dataset, but it is typically hidden by unrepresentative observations. Another study by Albelo (1999) developed an endogenous growth model where it treated education and investment in physical capital as perfect substitutes in human capital production. This implied a speed of convergence to the steady state, which came out consistent with other empirical studies.

In short, education is crucial for continuous growth through the increasing return of innovation. In addition, education is one of the main engines of knowledge, which is a major source of growth accounting for a significant part of the Solow residual. As a matter of fact, the interaction between human and physical capital, through male education in the former and log per capita GDP in the latter,

implies that more male education increases the magnitude of convergence. In other terms, more years of schooling raise the sensitivity of growth to the initial level of per capita GDP.

#### **II.D.2.b. LIFE EXPECTANCY**

Another major component of human capital is health best measured by the expected number of years to live, which can also be a proxy for the quality of human capital reflecting better work habits, performance, and skills.

De la Croix and Licandro (1999) endeavored an overlapping generations model to allow individuals choosing the length of time devoted to schooling before starting work, and showed that it depends positively on life expectancy. Furthermore, they found a positive effect of life expectancy on growth for economies with a relatively low life expectancy, but could be negative in more advanced economies. This positive effect of a longer life on growth could indeed be offset by an increase in the average age of the workers. Alternatively, Barro (1997) found a strong positive relation between life expectancy and growth, where a one-standard-deviation increase in life expectancy is estimated to raise the growth rate by 1.4 percent per year.

### **II.D.3. TOTAL CAPITAL**

The term total capital is measured by the interaction between income, education, and life expectancy. In other terms, this interaction reflects the total effect of physical and human capital on growth. Barro and Sala-i-Martin (1995) reported that the human/physical interaction term has a significant negative impact on growth. It implies a higher convergence effect, reflected by the fact that growth is more sensitive to physical capital when overall human capital is higher.

Within the human capital context alone, Benhabib and Spiegel (1993) attempted to test the contemporaneous changes in school attainment. Their results showed positive effects for male schooling and negative effects for female schooling. However, none of the estimated coefficients were individually or jointly significant. Barro and Sala-i-Martin (1995) reached similar insignificant results in the change of log of life expectancy. Thus, they deduced a possible explanation that the changes in school attainment and health (life expectancy) have too much measurement error to isolate the effects.

### **II. D. 4.FERTILITY RATE AND POPULATION GROWTH**

Fertility rate, or the typical woman's prospective number of live births over her lifetime, is a variable that has a negative effect on the long-run growth rate in neoclassical models with exogenous population growth. When the population grows, then a portion of total investment is used to provide capital for "new" workers rather than to raise capital per worker. In this framework, a higher fertility rate has a negative impact on per capita output, holding constant physical and human capital. Moreover, a higher fertility rate means that increased resources must be devoted to child rearing rather than to production of goods (Becker and Barro, 1988). Fertility decisions are endogenous and as previously discussed they might be affected by female primary education (Schultz 1989; Behrman 1990; and Barro and Lee, 1994).

Past studies showed no clear-cut evidence regarding the effect of population growth on steady-state output growth. Though its theoretical background implies an inverse relation, it usually appeared negatively but insignificant. For instance, Moreno and

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Trehan (1997) explored the spillovers' effects of nearby countries on a country's long-term growth, including population growth as one of the few variables (initial income, investment, schooling, and spillovers). Population growth turned out always negative but insignificant across all countries.

Iyigun (2000) incorporated the timing of childbearing into a growth model with endogenous fertility. He analyzed a model in which individuals' human capital stock depends positively on their education and parental human capital and in which producing and raising children and acquiring human capital are time intensive. The model demonstrated that early childbearing might lead to a development trap with low human capital.

Becker, Glaeser, and Murphy (1999) analyzed the effect of population on productivity. Results indicated that population may reduce productivity because of diminishing returns from more intensive use of land and other natural resources. Findings also showed that net relation between greater population and per capita incomes correlate with inducements to human capital and expansion of knowledge.

Fougere and Merette (1999) examined the impact of population aging on economic growth in seven OECD countries using overlapping-generation models by incorporating endogenous growth, which is generated by the accumulation of both physical and human capital. They noted that a generation invests mostly in human capital when young, and in physical capital when middle-aged. The results suggested that population aging could create more opportunities for future generations to invest in human capital formation, which would stimulate economic growth and reduce significantly the negative impact of aging on output per capita.

Kosai, Saito, and Yashiro (1998) explored the link between population decline and sustained economic development, and revealed that the negative effects of population decline may be avoided through endogenously induced mechanism. They also noted that declining labor supply would prompt business to innovate their personnel management practices so that labor is more efficient. Moreover, the study pointed out that labor policies could help reverse fertility decline.

Galor and Weil (1996) developed a model where fertility decision is related to the relative wages of men and women, population growth conditions capital per worker and capital per worker levels control relative wages. Under such conditions, high relative wages for women are both a cause and effect of economic progress. Output growth decreases when it reaches a steady-state equilibrium defined by a lower fertility rate and greater labor participation by women.

### II.D.5. TERMS OF TRADE

The terms of trade variable is measured as the ratio of export to import prices. Changes in the terms of trade have often been used as important influences on developing countries, which specialize their exports in a few primary products. Movements in real GDP occur only if the shift in the terms of trade stimulates a change in domestic employment and output. For example, an oil-importing country might react to an increase in the relative price of oil by cutting back on its employment and production. The growth rate of the terms of trade is regarded as exogenous and has usually a positive impact on long-run growth per capita. Although the terms of trade variable is statistically significant, it turns out not to be the key factor in the weak growth performance of many poor countries, such as those in Sub-Saharan Africa (Barro, 1997).

Bakus and Crucini (2000) noted a rising trend among some economists who suggested a break in the link between trade volumes and prices. They found that oil accounted for much of the variation in the terms of trade over the last twenty-five years and its quantitative role varied significantly over time. They also used a dynamic general equilibrium model to predict that the economy responds differently to oil supply shocks than to other shocks, thus changes in their relative importance helped to account for the unstable correlations in the data.

Boileau (1999) argued that standard two-country dynamic general equilibrium models grossly under-predict the volatility of net exports and the terms of trade. He examined whether trade in equipment can explain this failure and found that trade in equipments accounts for about half of the trade balance of G7 countries and most of its fluctuations over the 1971-1990's period. His results showed

that a standard model with trade in final goods generates a volatility of 0.1 for net exports and 0.52 for the terms of trade, while the annual G7 median relative volatility are 0.60 and 2.18, respectively. Models with trade in equipment, however, generate a volatility range between 0.55 and 0.98 for net exports and between 1.23 and 3.24 for the terms of trade.

Lutz and Singer (1994) studied empirically the link between increased trade openness and the terms of trade. Their evidence suggested that there is a sizable group of countries (LDCs and non-LDCs) for which the assumption of exogenous traded-goods prices can be rejected. They offered an implication that terms of trade considerations should be included in the assessment of trade liberalization policies and noted that these effects might rise considerably when several countries liberalize simultaneously.

## **II.D.6. INVESTMENT**

Growth literature used the investment determinant as the ratio of real gross domestic investment (private plus public) to real GDP. Investment is defined by the IMF as the summation of gross fixed capital formation and increase (decrease) in stocks. In the neoclassical growth model for a closed economy, the saving rate is exogenous and equal to the ratio of investment to output. A higher saving rate raises the long-run level of output per worker and thereby increases the growth rate, holding the initial level of GDP constant. A large volume of empirical studies, such as DeLong and Summers (1991) and Mankiw, Romer, and Weil (1992) examined the effects of investment on growth across countries and found a significant and a substantive positive role of the investment ratio.

Still the role of investment is puzzling in the growth framework since a reverse causation might also be plausible. For instance, Blomstrom, Lipsey, and Zejan (1993) reported a reverse relation between growth and investment where the former has a positive impact on the latter. Alternatively, Barro and Sala-i-Martin (1995) reported positive but insignificant effects of investment on growth.<sup>2</sup> But they found out that the life expectancy variable is sucking most of the investment effect and by eliminating life expectancy from their equation investment turned out to be significantly positive.

However, Barro and Sal-i-Martin suggested to keep the relevant life expectancy variable in the equation and implied a probable reverse relation between growth and investment.

Barro (1997) also found an insignificant effect of investment on growth but noted that the contemporaneous (change) investment ratio in a growth regression may reflect the positive growth effect on investment rather than the investment effect on growth. He argued that the former causality (growth on investment) might especially apply for an open economy. In this context, he tested this reverse relation through regressing the regular determinants of growth on the investment ratio (now a dependent variable) and found that a number of variables that affects growth also appear as stimulants to investment. His interpretation of the results is that some policy variables enhance economic growth partly by encouraging investment.

Kenny and Williams (1999) reported that investment alone can not account for variation in growth. They argued that the popular development models in the 1950s and 1960s made the focus on investment a major objective and this would lead to missing other important aspects of development. They gave evidence of some low-investment countries that grew rapidly, while other high-investment countries had lower growth rates. They noted that although investment correlated highly with growth since 1960s, it does not explain it.

Some researchers suspected that measures of investment could be problematic since it includes private and public expenditures. Those researchers linked this measurement problem to some studies where investment failed to have a significant positive impact on growth. In turn, some attempts have been made to breakdown the total investment separately into public and private spending and to examine their impact on growth (Barro and Sala-i-Martin, 1995), however, results did not differ significantly from using just the investment variable. Furthermore, DeLong and Summers (1991) used the total investment variable and reported significant results of investment on the steady-state output. Easterly and Rebelo (1993) considered the breakdown of public investment into its various

components. They found that expenditures on transport and communications are positively related to growth.

## **II.D.7. INFRASTRUCTURE**

In this context, infrastructure reflects the ability of communicating information (in addition to the well-known role of transportation—highways, airports, railroads, and so on.) It is a major source of acquiring knowledge, thus enhancing growth. The availability of communications infrastructure is measured by telephone density, the ratio of telephone main lines to population. In fact, The World Bank (1999) in its “World Development Report 1998: Knowledge for Development,” consecrated one whole section on the importance of infrastructure and defined its partial proxy—telephone density—as a factor that relates to people’s ability to access useful information when needed. This proxy is also very helpful for providing access to efficient sharing of resources through E-mail and Internet, thus stimulating productivity.

Although developed countries have an edge in their communications infrastructure, some developing economies have “leapfrogged” (i.e. made a big leap passing several steps of progress) over the richer industrial ones and installed fully digital networks. For example, economies with 100 percent digitization in 1993 included Botswana, Chile, United Arab Emirates, Bahamas, Barbados, Djibouti, Gambia, Hong Kong (China), Jamaica, Maldives, Mauritius, and Qatar compared to Germany with 37 percent digitization (World Bank, 1999).

Moreover, the introduction of mobile phones and its greater affordability can complement a well-developed wire-based network, or substitute for an underdeveloped one. For instance, in 1996, The Philippines had about three main lines per one hundred people and fifty-four percent mobile phone subscribers (percentage of all telephone subscribers). In the same year, Lebanon had about 17 main lines per one hundred people, while forty three percent of all telephone subscribers had mobile phones (World Bank, 1999).

This relatively new medium—mobile phones—is starting to develop exponentially through having a wireless Internet access to



mobile phones, as well as taking advantage of faster investment opportunities. For example, in China there is a separate hotline for each of the nearly 800 listed stocks where investors can use bank debit cards to place trades at brokerage offices, or trade using the keypads on their mobile telephones. Further, with the help of communications infrastructure, some multinational corporations (e.g. General Electric Corp. and General Motors Corp.) started to place their supply needs over the Internet soliciting the best bids from all over the world.

Hassan (2000a) investigated members of the Organization of Islamic Conference (OIC) and argued that the richer country members ought to finance infrastructure projects—roads, communications, railways, airports, and so on—of the poorer members. He postulated that this would expand the regional (Islamic) market for goods, capital, and labor, in addition to minimizing the inequality of wages and the rental on capital.

## **II.D.8. SPILLOVER EFFECTS**

In this context, spillover effects are some kind of externalities that a country can get from another neighbor country, it could be positive such as labor skills and technological transfer, or negative such as corruption and financial instability.

DeLong and Summers (1991) might be the first study that attempted to link the causation between location and growth, unfortunately, their findings did not support their belief. On the other hand, Chua's (1993) pioneer study postulated that countries can benefit from increased economic activity in their close geographical neighbors. He argued that this benefit could come from increased supplies of technological transfer, managerial expertise, capital, and skilled labor. He gave examples, such as the role of South Africa in Botswana, Lesotho, and Swaziland, and the positive spillovers effects of Hong Kong on Southern China.

Ades and Chua (1997) showed that the spillovers effects can be negative if they involve military threats and found that political instability in adjacent countries has a negative impact on a country's growth rate. Barro and Sala-i-Martin (1995) showed that the initial income level of neighboring countries is marginally significant in

explaining growth rates. Easterly and Levine (1995) used a border dummy variable to analyze the growth experience of Africa. They concluded that spillovers have a substantive impact on a country's growth: one percentage point increase in growth in the adjacent country during a given decade translates into own growth of 0.55 percentage points.

Moreno and Trehan (1997) investigated the relation between location and growth in a growth framework using different techniques, such as OLS and Maximum Likelihood. They found that a country's growth rate is closely related to that of nearby countries and showed that this correlation reflects more than the existence of common shocks. They also reported that trade alone does not appear responsible for these linkages either and found that being near a large market contributes to growth.

## **II.D.9. SCALE EFFECTS**

Benefits from larger scale can be found in theories of endogenous growth. In this context, significant initial costs for inventing or adapting new products or techniques at the country level allow larger economies to perform better. Implying that economies with larger scale inputs may reap the benefits of better efficiency.

Barro and Sala-i-Martin (1995) examined the existence of such a scale effect across countries by including the log of the working-age population. They found a positive but not statistically significant scale effect on growth rates, once they held the initial level of GDP and human capital (education and life expectancy) constant. This weak relation would not explain much of the variations in countries' gross rates.

Hassan (2000a) argued that the OIC members should strengthen the backward and forward linkages in production and investment in order to lower unit cost through attaining higher economies of scale, to increase the size of domestic and regional markets, and to intensify the relation with other trading blocks, such as EC, NAFTA, and APEC. He also emphasized on the importance of increasing the flow of goods, capital and labor within the OIC region rather than the increasing volume of imported luxury goods from OECD countries.

## **II.D.10. REGIONS**

Past and recent empirical studies have observed that growth rates have been low in Sub-Saharan Africa and Latin America, while high in East Asia. Growth regression equations would deal with the effect of these regions as dummy variables. Barro and Sala-i-Martin (1995) added these regional dummy variables as the last explanatory variable in their growth equation expecting that their impact on growth would not be statistically significant from zero. Thus, implying that their included explanatory variables were enough to explain unexpected variations in growth in the different regions.

Their results showed that the estimated coefficient of the Latin American dummy variable is significantly negative, while that for Sub-Sahara is insignificantly negative. That for East Asia appears positive but not statistically significant. They explained their unexpected result of the Latin American dummy variable as reflecting adverse effects of government policies, such as corruption and market distortions that have not been captured by the other included variables in the regressions.

Barro (1997) added the inflation rate variable in the regression. This inclusion of the inflation rate resulted in the elimination of the significance of the Latin American regional variable. This is reasonable in the sense that the Latin American region has been experiencing high rates of inflation and currency devaluation for several years. Thus, controlling for inflation would help to better explain variations in growth rates in this specific region.

## **II.D.11. REGIONAL INTEGRATION**

Regional integration or RTA, as discussed earlier, describes the process of when country members have a different trade arrangement between them as compared to the rest of the world. Article XXIV of the GATT sets the rules for the creation of regional arrangements, while Article VI and XIX regulates antidumping and voluntary export restraints, respectively. Intense debate still occurs between advocates and opponents of regional integration, where each group tries to relate the issue to the overall welfare of the world, gains of participant members, losses of nonmembers, and so forth.

Advocates of regional integration relate its benefits to several reasons, such as the efficient resource reallocation according to the comparative advantage concept, economies of scale achieved by specialization, reduction in transport costs, and trade creation. On the other hand, opponents indicate that RTA might create trade diversion, hurt nonmembers' standards of living, and most of all discriminate against WTO ideologies of a global free trade area, where all nations should be treated equally—in regards to tariffs and non-tariff barriers—on the basis of most favored nation (MFN).

A large volume of empirical research tackled regionalism and no clear cut has yet been achieved. Studies dealing with even the same micro issues ended up with conflicting results (of course, this might be a healthy way to improve research). For instance, transport costs—one of the benefits of RTA—are found to be substantial and justified in initiating an RTA (Frankel, Stein, and Wei, 1996), while those same costs were found unjustified and outweighed by the overall negative effect of an RTA (Panagariya, 1998). The next section lays out some studies conducted by opponents of regional integration, followed by another section citing works of some of its supporters.

Panagariya (1999), one of the strongest opponents of regional integration, argued in an overview on the regionalism debate that a real trading system should never be discriminatory. In a different study on Mercosur—an RTA among Brazil, Argentine, Uruguay, and Paraguay, Connolly and Gunther (1999) showed that by encouraging intra-trade (trade within the bloc) at the expense of inter-trade (trade with nonmembers), Mercosur might limit member countries' access to high-technology imports, an important stimulus to growth. He also postulated that Mercosur has shifted trade in many manufactured goods to higher cost member countries—a symptom of trade diversion.

Martin (1998) endeavored another specific case of regionalism—the European Union, and found that contrary to the neoclassical paradigm, the new growth theory does not predict that income convergence between rich and poor regions is the only possible result. He explained that regional integration might be at the origin

of more inequality between regions. Other studies showed that regional integration via inner-union trade liberalization can lead very well to a decline of the steady-state growth rates (Walz, 1997).

Moreover, Panagariya (1994; 1996) emphasized that nondiscriminatory regionalism promises to be the most feasible option since, despite its negative trade effects, it offers more chances for liberalization and may result in long-term gains. He also contended that NAFTA and FTAA would be more beneficial for the US than Latin American countries because the former can provide little preferential access to the latter while the reverse is not true. As a final example on RTA's opponents, Bryant (1994) noted that economic integration might have a negative effect on political sovereignty. He explained that with deeper economic integration, the differences in nations' domestic policies, formerly neglected, have increasingly been exposed to international scrutiny.

On the other side of the spectrum, supporters of regionalism have also tackled pertinent issues with rigor and zeal. For instance, Torstensson (1999) employed both the neoclassical and endogenous growth models to examine growth and knowledge transfer in the case of European integration. Her results showed that member countries do in fact experience more knowledge spillovers compared to nonmembers, and that trade variables are especially important for growth. Moreover, Wei and Frankel (1998) contended that it might not be politically feasible for trade blocs to dramatically reduce their trade barriers against nonmembers. However, they argued that an open regionalism in which trade blocs undertake relatively modest external liberalization could usually produce Pareto improvement.

Hassan (forthcoming) used a gravity model to examine the intra-trade of the South Asian Association for Regional Cooperation (SAARC) bloc. His findings revealed that intra-SAARC trade is neither trade creating nor trade diverting. Subsequently, Hassan suggested a move towards trade liberalization and deeper regional or multilateral integration, which would considerably benefit the SAARC countries as well as all the economies in the region.

Walz (1998) investigated the enlargement of a common market using the endogenous growth model. He showed that integration of

a third technologically lagging country via trade liberalization causes a reallocation of resources, which stimulates overall growth. He also noticed that liberalizing trade with the third country leads to income convergence between the two established countries. Kirkpatrick (1994) studied regionalism in East Asian countries and noted that growth of these countries correlates with regional trade and investment flows, among them. He also explained that the fears that have been expressed regarding the threat posed by East Asian regional cooperation to global trade liberalization are unfounded since the concept of open regionalism continues to be the guiding principle behind regionalism in East Asia.

Finally, Rivera-Batiz and Romer (1991) analyzed the impact of north-north (between two developed countries) economic integration on worldwide steady-state growth rates, and found a positive link. In addition, their findings showed that starting from a position of isolation, closer integration could be achieved by increasing trade in goods or by increasing flows of ideas. In return, this encourages the worldwide exploitation of increasing returns to scale in the R&D sector.

## **II.D.12. AGGLOMERATION**

Agglomeration is the concentration of economic activity in a specific location. It can allow economies of scope to emerge, thus fostering specialization as well as diversity in supply. This can be achieved when the presence of one activity makes carrying out a complementary activity cheaper (Krugman, 1993; and Quigley, 1998). Agglomeration economies come in various forms: “localization economies” where firms in the same industry are located next to each other; and “urbanization economies,” which is reflected by the proximity of various economic actors in a specific location (World Bank, 2000). Accordingly, benefits can be generated from these two forms of economies.

Porter (1990) postulated the determinants of national advantage in a “cluster” framework where all microeconomic units work together in providing a more efficient and coherent macroeconomic environment. He argued that nations could achieve growth in “clusters” (concentration) of industries connected through vertical and horizontal relationships.

Martin (1998) conducted a study to assess the impact of regional policies on the growth and economic geography of European regions. He analyzed theories on growth and geography on regional convergence in Europe, from an empirical and theoretical perspective. His results indicated the need for a spatial concentration of economic activities when maximizing economic growth and accommodating efficiency issues in the European region. Accordingly, he suggested the need for a conceptual model to comprehend the various effects of trade, growth, and location on regional policies in the region. Ricci (1999) investigated the relationship between agglomeration and specialization, and the role of comparative versus absolute advantage by using a two-country three-sector model. Interestingly, he found that economic integration may reduce or even reverse the agglomeration pattern. Further, results showed that an increase in comparative advantage is not necessarily associated with an increase in specialization.

On the other hand, Krugman and Venables (1996) considered two monopolistic industries located in two countries where intermediate usage creates cost and demand linkages between firms, encouraging industrial agglomeration. If high trade barriers occur, then each industry operates in both locations in order to supply final consumers. But at lower trade barriers agglomeration forces dominate, allowing each industry to concentrate in a single location. Therefore, economic integration induces agglomeration. Krugman and Venables also found long run gains from integration, but noted that during the adjustment process some labors may suffer lower real wages as relocation of industry occurs.

### **II.D.13. FINANCIAL DEVELOPMENT**

Development in the financial system could take different forms, such as banking reforms, accounting standards, stock market liquidity, international financial flows of capital and other instruments, and so on. The financial sector may play an important role in the variations of growth rates across countries. King and Levine (1993) found that various measures of the level of financial development are strongly associated with real per capita GDP growth. They focused on the benefits of investment and growth from the perspective of sophisticated financial markets and noted that the predetermined component of financial development is robustly correlated with the steady-state of growth. Other studies (Barro and Sala-i-Martin, 1995) argued that it is still unclear whether the causation between financial development and growth is isolated, thus negating an inverse relationship between growth and the financial system.

International financial flows appear to be very crucial in stimulating several aspects of growth. This can occur through technological developments in computing and telecommunications that are reducing transaction costs. In fact, it has been recently argued that hedge funds and the use of new derivative instruments could increase the volatility of capital flows, thus increasing risk, but also diversifying opportunities. On the other hand, investing in derivative securities could be desirable for banking and other financial institutions performing in a volatile stock market



environment; but keeping in mind a careful practice. Consequently, high risk accompanied with diversified portfolios can promise potential attractive rewards. Financial globalization can affect economic growth in three ways: by increasing the global supply of capital, by enhancing allocative efficiency in the domestic financial sector, and by raising the quality of banking services (Levine, 1997). In this context, the international diversification of financial funds is becoming an essential requirement for attaining an attractive risk/return combination. Actually, the pool of institutionally managed funds that is invested abroad grew from US\$ 100 billion in 1980 to US\$ 4 trillion in 1995 (IMF, 1998).

Another benefit of the development of international financial flows lies in the new behavior of successful governments. Historically, governments preferred debt (i.e. bank loans) to foreign direct investment (FDI) or portfolio (stocks and bonds) financing, because they did not want foreign ownership of certain segments of the economy and because domestic owners of major corporations feared losing control (Bennell, 1997). However, the behavior of many of these governments has changed to a full interest, especially in FDI. Those same governments started realizing the broader benefits of FDI that brings with it not only capital, but also expertise, technology, market access, greater competition, better allocation of resources, stability (less volatile investments), and so forth. In fact, between 1992-97, FDI showed to be more stable than commercial bank loans and total portfolio flows (UNCTAD, 1998). Government policies play a vital role in creating a suitable environment in which the transfer of technology and other spillovers can take place.

In addition to the lower volatility (higher stability), FDI may be less costly in resolving a potential financial crisis. For example, Caprio and Klingebiel (1999) showed that resolving bank crises can cost up to forty percent of GDP, in the case of Chile (1982-85) or Indonesia (1997-ongoing). However, it is worth to note here that most FDI stock in developing countries (mostly investments provided by firms in OECD countries) is concentrated in few markets like China (6%), Brazil (4%), Mexico (3%), Singapore

(2%), Indonesia (2%), Malaysia (1%), Saudi Arabia (1%), and Argentina (1%) (UNCTAD, 1998).

Konishi, Saggi, and Weber (1999) endogenized trade policy in a two-firm framework composed of a domestic and a foreign firm, where both firms influence the domestic government's trade policy via their contributions. They found that the foreign firm can avoid trade restrictions by undertaking FDI in the domestic market. Thus, the government prefers a voluntary export restraint (VER) to a tariff for two reasons: first, a VER leads to higher contributions from the foreign firm than a tariff; second, a VER provides a higher level of protection to the domestic firm without generating FDI by the foreign firm.

Although the opportunities of the development of global financial flows are numerous, its threats are well concentrated around the so-called "Contagion" effect: disturbances in one country's financial market can have consequences in others. In this framework, this effect is similar to the Domino theory in international relations (if one falls, everyone else will follow). A simple example of the Contagion effect is the bank panic where depositors rush to withdraw their money from banks in reaction to some negative publicity or rumor pertaining to "one" bank insolvency. Thus, this rush to "all" banks will cause insolvent as well as (some) solvent banks to fail.

Levine, Loayza, and Beck (1998) postulated the factors leading to financial development and growth by chartering a path of three levels that starts with the legal foundations. The first level would include creditors' rights and enforcement where both help in establishing strong banks at the second level. The first level would also include accounting standards and shareholders' rights, which would lead to sound stock markets at the second level. Finally, both banks and stock markets would contribute in improving growth at the third level. Levine (1998) examined the relationship between the legal system and banking development and their potential impact on long-run per capita growth. He found that countries where the legal system emphasizes creditor rights and properly enforces contracts

have better developed banks than countries where laws do not give a high priority to creditors and where enforcement is lax. Furthermore, he showed that the exogenous component of banking development has a strong positive impact on per capita growth, physical capital accumulation, and productivity growth.

La Porta and others (1998) and Levine, Loayza, and Beck (1998) found that poor countries tend to have weak legal and accounting systems. In particular, they found that the English and Scandinavian types of legal system are better than the French and German ones. Levine (1996) showed that the strong performance of stock markets can play an important role in promoting economic development and growth. He also discussed that active stock exchanges create liquidity, which in turn, makes investments less risky. Further, he found that greater stock market liquidity precedes and even enhances economic growth. Levine (1997) argued that a large volume of studies have erroneously treated financial systems as a factor of economic trends. He referred to previous studies, which have stated that changes in monetary and fiscal policies, and other economic activities influence the quality of financial systems. He noted that these facts negate the assumption that the financial system automatically responds to economic growth and is irrelevant to economic expansion.

Levine and Zervos (1998) remarked that stock market liquidity and banking development positively predict growth, capital accumulation, and improvements in productivity. More interestingly, they showed that control for economic and political factors does not affect results when factors are entered in regressions and that stock market size, volatility, and international integration are not robustly linked with growth. Mallampally and Sauvart (1999) argued that FDI has grown at an enormous rate since the early 1980's, and the world market for it has become more competitive. Subsequently, developing countries need more than just liberal policies. They rather need to offer potential investors with more "created" assets and locational advantages in order to keep attracting FDI.

## **II.D.14. THE FISCAL ROLE OF GOVERNMENT**

The role of government has been utilized more efficiently in recent years through behaving like a moderator rather than a regulator. Governments started realizing the benefits they can generate by liberalizing their policies, increasing their investments in human capital, providing better infrastructure, facilitating transactions, enforcing law, protecting property rights, reducing public spending and taxation, lowering tariffs, easing restrictions on the flow of capital, goods and services, and so forth. In fact, the critical role of government in stimulating economic development has been clearly pointed out since early 1980s. Kuznets (1981) argued that modern economic growth involves an increased role for foreign commerce and that technological progress implies reduced reliance on natural resources. Further, he discussed the growing importance of government:

“...the spread of modern economic growth placed greater emphasis on the importance of need for organization in national sovereign units...The sovereign state unit was of critical importance as the formulator of the rules under which economic activity was to be carried on; as a referee...; and as provider of infrastructure...” (Kuznets, 1981)

Easterly (1991) assessed the responsiveness of growth to government economic policies, technological advances, and the minimal influence of culture. He suggested that multilateral institutions such as the IMF and World Bank can contribute to the revival of growth by providing capital to help cover ‘start-up costs’, and by providing support for reform of inefficient government policies, the achievement of macroeconomic stability, and the creation of essential public infrastructure.

Levine and Zervos (1993) noted that cross-country empirical studies successfully showed the causation between indicators of financial development and long-term growth. But the link between other indicators of national policies and growth still lack conclusiveness. They argued that it is hard to find convincing associations between indicators of national policies and per capita growth, especially in regards to indicators of fiscal and monetary policy.

## **II.D.14.a. GOVERNMENT EXPENDITURES**

Economic literature introduced government fiscal role in growth regressions as the ratio of real government expenditures to real GDP less the ratio of nominal spending on defense and non-capital expenditures on education to nominal GDP (nominal instead of real expenditures because of the lack of accurate deflators available for spending on defense and education.) Some studies argued in favor of this elimination in defense and education spending since they are not properly viewed as consumption and might have direct effects on productivity or security of property rights, thus viewed as a kind of investment. This will be discussed in more details in the coming sections.

Alesina and Rodrik (1994) argued that the greater the inequality of wealth and income, the higher the rate of taxation (or greater government expenditures), and the lower growth. Their empirical results showed that inequality in land and income ownership is negatively correlated with subsequent economic growth. Barro and Sala-i-Martin (1995) estimated the impact of government expenditures on growth and found it significantly negative. They explained that their strong result reflects the possibility that the variable government expenditures to GDP proxies for political corruption or nonproductive public expenditures and taxation.

## **II.D.14.b. GOVERNMENT EXPENDITURES ON DEFENSE**

As discussed earlier, some studies used government expenditures excluding defense and education spending since they are not regarded as consumption items—defense and education expenditures were rather perceived as productive investments. In this context, defense expenditures have been examined by Barro (1991) to see if it really acts as a productive instrument. To control for war, he added a dummy variable for countries that participated in at least one external war over the period 1960-85. He showed that an exogenous increase in government expenditures on defense can generate better national security. However, if the increase in defense spending is due to greater military threats, then such an expenditure would be nonproductive. He also found that the estimated coefficient of government expenditures on defense has an insignificant effect on growth.

Alternatively, Mehanna and Choudhury (2000) examined the US increase in defense expenditures during the Kosovo war and its impact on the US domestic economy. They argued that if a country faces a potential or current war at a remote location (not with a bordering country), in a collective effort (the country is a member of an international or regional body, e.g. NATO, UN, etc.), and against a relatively marginal military power (that would not threaten national security), in this case an increase in defense expenditures would act as a fiscal policy that could stimulate domestic demand and consumption. Thus, government expenditures on defense would become productive *even during war* and could positively affect growth.

#### **II.D.14.c. GOVERNMENT EXPENDITURES ON EDUCATION**

For the same reason of defense spending—to find if it was a productive or nonproductive element and its impact on growth, Barro and Sala-i-Martin (1995) found that public spending on education is productive and has a significantly positive impact on long-run per capita growth. Moreover, they interpreted their variable—government spending on education to GDP—as a proxy for the quality of schooling. On the other hand, Beanton and others (1996) found that public expenditures on education do not guarantee quality education (measured by mathematics test scores.)

#### **II.D.15. MARKET DISTORTIONS**

Barro and Sala-i-Martin (1995) used black-market premium on foreign exchange as a proxy for government distortions of markets (such as interfering and manipulating the exchange rate, and so on), thus an increase in market distortions (or black-market premium) would hinder growth and an inverse relationship is then expected. They used this variable in the regression equation as  $\log(1 + \text{black-market premium})$  to estimate its impact on growth and found, as expected, a significantly negative effect. Easterly (1993) examined the effects of relative input price distortions on growth. He noted that the effect's magnitude depends on the production elasticity of substitution while subsidized inputs and investment goods can increase growth. He argued, however, that a subsidy to a single capital good financed by a tax on another good lowers growth. His

results showed adverse effects of the variance of investment goods' relative prices across sectors. He also found that penalizing investment goods and distorting financial markets hampers growth.

## II.D.16. POLITICAL INSTABILITY

Barro (1991), and Alesina and Perotti (1996) among others measured political instability by using Banks' (1979) data on the number of revolutions per year and political assassinations per million inhabitants per year. They used this variable as reflecting the probability of threats to property rights through political turmoil. In this context, greater instability reduces the incentive to invest, thus lowering growth. These studies attempted to isolate the influence of instability on growth to examine the temporal causality (where instability precedes growth) and findings showed that the estimated coefficient of political instability has a marginal negative effect on growth. On the other hand, Londregan and Poole (1990) reported that lower economic growth increases political instability; thus, implying that growth is a function of political instability.

Mankiw (1995) brought out that political stability would raise long-run economic growth as well as attract domestic and international investments. He argued that the government should also take an active part in the redirection of financial resources by directing capital, which yields sizable positive externalities. Gutierrez (1996) argued that small countries tend to be less stable than larger countries because they rely more than larger ones on foreign trade, and their exports are only concentrated in only one or few products or markets. This would make these small countries more vulnerable to supply and demand shocks; thus, making their stability more critical. He suggested that in this case, integration may economically help small countries.

Alesina and Perotti (1996) showed that income inequality, by fueling social discontent, increases socio-political instability. The latter, in turn, creates uncertainty in the politico-economic environment, thus reducing investment. Consequently, they identified that an increase in income inequality, leads to greater instability and lower investment, thus lowering growth. Devereaux and Wen (1998) indicated that growth rates of per capita GDP tend

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to be negatively associated with the size of government (government expenditures) and with political instability. They used a linear endogenous growth model of government spending and taxation and predicted that greater political instability leads to both lower growth rates and a higher share of government spending in GDP.

Corruption could be treated as a component of political instability, which might have an effect on growth. Within this context, Barreto (2000) presented a simple neoclassical growth model where corruption is an endogenous result of competition between a public agent and a private agent. His results suggested that, a priori, corruption is neither enhancing nor efficiency detracting with respect to growth but always results in some income redistribution.



## II.D.17. TRADE AND TARIFFS

Governments can influence trade through pertaining policies such as tariffs, non-tariff barriers, import quotas, VER, import-substitution strategies, antidumping laws, and so forth. In cross-country studies, international trade is the process of exchanging—importing and exporting—goods and services between countries. Before David Ricardo's (1817) *comparative advantage* concept—described by the relative advantage of nations by producing what they are best in and buying the rest from others—nations used to stress on the benefits of exports in the accumulation of wealth, a concept known as *Mercantilism*. Growth and development economics has been evolving since then, and recent views on the benefits of trade has changed to reflect the significance of both imports and exports in a comparative and competitive advantages frameworks (Porter, 1990). Furthermore, Edwards (1993) showed empirically that trade openness (measured by the sum of imports and exports to GDP) rather than just exports, affects growth positively.

Nowadays, more developing countries perceive trade as the main benefit, which can be achieved through globalization in order to enhance their per capita growth rates. In fact, the number of countries joining the GATT/WTO has increased from 85 countries in 1980, 100 in 1990, to 134 in 1999 (WTO, various years). In this case, an increase in total trade (imports plus exports) can be realized through liberalizing trade policies, where lowering tariff rates and non-tariff barriers (import quotas or VER) can lead to more trade openness; thus, improving growth. The tariff reductions implemented after the Uruguay Round in 1994 (the transition from GATT to WTO) raised national incomes of participating countries by 0.3 to 0.4 percent (Srinivasan, 1998).

The gains from trade openness are numerous: imports increase competition and variety of choice to domestic markets, benefiting consumers through lower prices, better quality and greater variety, thus creating a more efficient allocation of resources; while exports expand foreign markets, benefiting businesses, and bringing in foreign currencies. More importantly, trade exposes domestic firms to the best managerial expertise and technologies of foreign firms.

Further, trade openness that is escorted by freer flow of labor and capital, and regional trade agreements can play a vital role in attracting FDI, which, in turn, can contribute in raising growth. International trade flows affect various layers of economic structures such as employment adjustments, income distributions, environmental standards, and productivity growth. For instance, trade has generated a mechanism of “global production networks”, where various stages of production are being conducted in different countries, benefiting from the declining transportation and communication costs that technological progress has provided (Krugman, 1995; Feenstra, 1998).

In one of its recent official publications—the World Development Report 1999/2000, the World Bank (2000) discussed that liberalizing trade in services (and agriculture) is the new promising trend in this twenty-first century to boost growth. In particular, developing countries would gain considerably from the liberalization of trade in services, such as sectors that use services as inputs to production or labor-intensive sectors. For instance, many multinational corporations are contracting their services and bidding for orders across international borders making use of the low cost, accessibility, and speed of electronic commerce.

But reform in liberalizing trade is faced by resistance, especially in industrialized economies where adjustment to the international competitive system can be a painful process in the short-term. This process requires reallocation of resources within and among economies, and that restructuring—such as shifting resources and labor markets to the most efficient industries or sectors—can be costly for some. In fact, import-competing firms are also resisting further trade reform by using antidumping laws. These laws are described by imposing restrictions such as higher tariff rates or non-tariff barriers on imported goods under the pretext that such foreign goods are sold under their marginal cost to achieve market access. Miranda, Torres, and Ruiz (1998) showed that when filing antidumping investigations, industrial countries filed 39 percent of total filings (industrial, developing, and transition countries) against developing ones, while developing countries filed 37 percent of total filings against industrial ones.

One important aspect in realizing trade openness lies in the reduction of tariff rates and non-tariff barriers. Lee (1993) found that a cut in tariff rates on capital goods and intermediate goods has a significant positive impact on per capita growth rates across countries. His findings can also reflect that market distortions through government interference by raising tariff rates can reduce growth. Barro and Sala-i-Martin (1995) examined the effects of non-tariff barriers (by counting lines of regulations) and found an insignificant relation to growth rates. Williams III (1999) showed that as long as trade barrier does not generate rents for domestic households, the optimal level of the trade barrier is unchanged from the first-best case. Moreover, trade policies that increase domestic rents suffer an additional efficiency cost, and in this case the optimal policy is less strict than in the first-best case.

Frankel and Romer (1999) brought up strongly the relationship between trade openness and per capita income growth. They reported that a 1 percent increase in openness raises per capita income by between 0.5 and 2 percent. Kre and Imir (2000) considered a standard duopoly model where the Northern and Southern firms (in developed and developing/less-developed countries, respectively) compete in quantities in an imperfectly competitive Northern market and there are varying degrees of intellectual property rights (IPR) violation by the South. IPR violation is reflected through the spillover of technological knowledge from the Northern to the Southern firm creating unit cost reduction. Kre and Imir results suggested that optimal tariffs for north is higher in order to protect IPR leakage to the south and to stimulate north domestic innovation (due to greater economic profits).

When it comes to the valuation of traded goods, accounting standards usually value imported goods on cost-insurance-freight (CIF) basis, where the total price of imported goods includes the cost of goods, their insurance, and their freight expenses arriving to their final destination (the buyer country). While the value of exports is reported on a free-on-board (FOB) basis, where the total cost reflects only the charges until the goods are delivered on board of the domestic port. Erzan and Yeats (1991) examined the difference between CIF and FOB valuation applied on traded goods. They

noted that using a CIF basis on imported goods places burden on countries with relatively higher freight and insurance costs. Their results showed that on intra-regional trade, developing countries are usually at a transport and insurance cost disadvantage relatively to developed ones. Thus, they suggested that a shift from CIF to FOB valuation would remove the bias against developing country intra-trade.

Edwards (1993) studied the cases of two developing countries: Chile and Korea, to show that trade liberalization rather than export policies provides a greater impact on economic development. Alternatively, Hassan (2000b) used a gravity model of international trade to examine trade and economic development among SAARC countries. He concluded that efforts should be made to liberalize border trade and strengthen bilateral trade relations through separate sets of trade concessions in the general framework of South Asian Preferential Trading Agreement (SAPTA).

Mehanna and Hassan (2002) examined the intra-trade and inter-trade effects of the Gulf Cooperation Council (GCC) in a Middle Eastern framework, and contrary to the consensus, they found a trade creation outcome. Although most past studies reported that the GCC is not a viable trading bloc, Mehanna and Hassan argued that the bloc should be studied within a Middle Eastern framework rather than an Arab one where Iran and Turkey—two major trading partners with the Gulf States—are considered.

Sachs and Shatz (1996) considered that an increased investment in education, job training, and compensatory adjustment assistance for workers most hurt by trade shocks, are likely to be the most effective policy responses to recent trends in trade openness and globalization. Implying that these policies can effectively work in narrowing the gap in income inequalities within and among nations. Liu, Song, and Romilly (1997) examined the causal relationship between openness and economic growth in China. They used cointegration models to identify a bi-directional causal link between GNP and exports plus imports and found that this bi-directional causation is consistent with China's development strategy of protected export promotion.

Krueger (1998) suggested that developing countries should shift from adopting import-substitution to trade liberalization policies as a growth strategy. She also argued that continued import-substitution policies could only lead to restrictive trade policies due to the need to save foreign exchange, which could be stripped by production requirements. Subsequently, this openness policy should be used in the context of an outer-oriented trade strategy so as to offset the effects of imports by promoting the growth of exports.

Opponents of free trade argued rigorously that openness increased inequality of income. In this context, Edwards (1997) investigated the link between income distribution and trade policy and found no proof of a relationship between free trade and inequality of income in developing countries. However, he noted that measurement problems may exist due to the cross-country empirical nature of the study.

On the other hand, Rodrik (1998) argued that while neoclassical economists view protectionist policies of import-substituting industrialization (ISI) as a main factor contributing to the demise of economies, a closer examination of ISI in Latin American countries reveals the method to have little connection with economic decline. More than that, he described that ISI was shown to have contributed to unparalleled economic growth in the countries within a 20-year period. Diao, Roe, and Yeldan (1999) showed that while strategic trade policy has little effect on re-allocating resources into domestic R&D activities, it can significantly affect the cross-border spillovers of technological knowledge, which, in turn, stimulates growth. They found that trade liberalization may decrease growth rates and lead to a loss of social welfare in the long-run, although it improves welfare in the short-run.

Furusawa (1999) examined how the governments of two countries explicitly negotiate over a new pair of tariffs. He investigated how the difference in the two governments' patience affects the negotiation results. Assuming a common optimum tariff as the status quo tariff rate for each country, he found that the country with the more patient government gains most from the negotiation if the time lag between a defection and punishment in the implementation phase is short. The opposite is true if the response

lag in the implementation phase is long. Kolev and Prusa (1999) considered the incentives for a government to levy an optimal tariff on a foreign monopolist with unknown costs. They showed that with complete information, the home government uses a discriminatory tariffs policy to extract rents. If the government is incompletely informed about costs, the firm exports the same quantity regardless of its efficiency. Consequently, Kolev and Prusa found that with incomplete information about the exporting monopolist foreign firm, the home government finds it better to adopt a uniform tariff or a free trade policy to increase home welfare.

Baldwin and Forslid (1999; 2000) studied the effects of incremental trade liberalizations on long-term economic growth using Tobin's q-theory approach. Their results showed that the effects of a liberalization growth depend on the initial level and kind of protection. One year later, they found that trade liberalization can stimulate growth via a pro-competitive effect in the R&D and/or financial sectors. Park (2000) analyzed how changes in the structure and environment of trade agreements between a small and a large country affect the efficient frontier. He discussed that using the autarky punishment instead of the interior Nash punishment may provide the small country with greater bargaining power. He also identified that negotiating direct transfers under free trade instead of reciprocal tariff reductions improves the worst possible negotiation outcome for the small country. Krugman (2000) advocated the view that changes in income distribution primarily reflect technology rather than trade. He argued that factor bias of technological change is not immaterial and does matter. Furthermore, he suggested that the use of factor content approach to infer the effects of trade on factor prices turns out to be an entirely justified procedure when carefully applied.

### **II.D.18. DEMOCRACY**

After discussing the extended role of government that encompasses spending on education and defense, market distortions, political instability, and trade and tariffs, an added component, democracy, can also be influenced by government policies. Democratic rights can take different forms, such as freedom of speech and the press, freedom to run for office and vote, and so on.

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Gastil (1987) measured these forms of civil liberties and political rights in the form of subjective indexes, reflecting political but not economic freedom. The connection between political and economic freedom can be so controversial, where some studies supported the view that an expansion of political rights (democracy) enhances economic freedom, thus stimulating growth. Other studies stressed that the two freedoms are mutually reinforcing, while the rest of work focused on the view that economic freedom precedes democracy.

The interplay between economic and political elements may also involve the role of growth. Lipset (1959) postulated that economic prosperity fosters democracy, a view known as the "Lipset hypothesis." He explained that increased education and an enlarged middle class work are stimulating elements to democracy. Putnam, Leonardi, and Nanetti (1993) noted that since private institutions are important as checks on dictatorship, the propensity for civic activity becomes the driving force behind good government in the regions of Italy. Alternatively, Huber, Rueschemeyer, and Stephens (1993) showed that the development of capitalism reduces the power of the landlord class, while raising the power of the working and middle classes.

Barro and Sala-i-Martin (1995) estimated the effects of democracy on per capita growth and found that democracy represented by political freedoms and civil liberties has no significant effect on the steady-state growth. They interpreted that in case democracy enhances growth, then it is probably done through indirect instrumental variables, such as education and market distortions. Since recent empirical work found a weak (if any) effect of democracy on growth, the Lipset hypothesis seemed to be gaining more popularity due to supporting empirical evidence.

Barro (1997) used the role of elections (political rights) as a proxy for democracy and found some evidence of a nonlinear relationship between economic growth and democracy. At low levels of political rights, an expansion of democracy stimulates growth. However, once a moderate level of democracy has been attained, further expansion reduces growth, indicating a parabolic

shaped-curve—a quadratic link represented by estimating the democracy variable squared. Barro found support to Lipset hypothesis and interpreted this parabolic relationship as: in countries that already achieved some level of democracy, further democratization may retard growth because of the increased demand and pressure on providing more social programs and better income distribution. Noting here that several determinants of growth—real per capita GDP, life expectancy, and a smaller gap between male and female educational attainment—are also found to predict democracy.

## **II.D.19. RULE OF LAW**

Knack and Keefer (1995) used data from the International Country Risk Guide (ICRG), a publication made for investment purposes, which includes political, as well as economic and financial risk data. They described the ICRG data set, which includes five measures of institutional quality, as follows: “rule of law” (the extent to which institutions provide effectively for implementation of laws, adjudication of disputes, and orderly succession of power); “corruption in government” (related to the frequency of bribes in areas such as international trade, taxation, and police protection); “quality of the bureaucracy” (including the degree of autonomy from political pressure); “expropriation risk” (assessment of risks of outright confiscation and forced nationalization); and “repudiation of contracts by government” (including risks of repudiation or modification due to changes in government).

Barro and Sala-i-Martin (1995) used Knack-Keefer variables and found that the rule of law variable has a significant positive impact on growth. However, if the rule of law is included with the political instability variable in the same regression, the former variable takes out some of the explanatory power from the latter one. They also showed that none of the four other measures of Knack-Keefer from the ICRG—corruption in government, quality of bureaucracy, expropriation risk, repudiation of contracts by government—is statistically significant, if the rule of law is also included. However, they could not show a clear causation from the direction of rule of law to growth due to the lack of adequate instruments or more time-series observations of the rule of law variable. But they indicated a



more probable possibility of causation from the rule of law to growth reflected by the similarity in statistical results obtained from the two decades under study (1965-75 and 1975-85). Moreover, Barro (1997) attempted to show a more conclusive positive impact from the rule of law on growth.

## II.D.20. INFLATION

The role of government in relation to monetary policy is characterized by the level of autonomy given to central banks, the seriousness of law enforcement, the provision of a sound macroeconomic environment, and so on. Inflation is the most critical element of monetary policy because especially central bankers, as costly, perceive it. Inflation is usually measured by the consumer price index (CPI) or the GDP deflator, and reflects the change in prices from a base year. Briault (1995) conducted a theoretical review on the cost of inflation. Although his presumption showed that inflation is bad and some of the other empirical results suggested that inflation is harmful, the evidence is not overwhelming. The wealth of academic literature since Okun (1971) and Logue and Willett (1976) seems to confirm the popular view that a higher variability of inflation (measured by the standard deviation of inflation rate) tends to accompany a higher average rate of inflation.

Barro (1997) found that inflation variability has no significant effect on growth and interpreted results in a way that the variability of inflation does not adequately measure the uncertainty of inflation (this issue is still not explored enough in the literature). Further, he reported a linear relationship between inflation and growth and that the former has a significant negative effect on the latter, especially for inflation rates between 15 to 20 percent. Interestingly, he found no evidence in any range of a positive relation between inflation and growth. His analysis also suggested a clear causation from inflation to growth, rather than the reverse. One problem in interpreting inflation on growth lies in the endogenous nature of inflation, where the direction of causation is not clear enough. Kocherlakota (1996) considered the relation between the endogenous inflation rate and the exogenous money growth rate. He implied that results would be different if money growth is used instead of inflation rate in the

growth regressions. He estimated the effects of money growth on economic development (measured in growth rate of per capita GDP) and found an inverse relationship.

The main actor of inflation-monetary policy is the central bank, making its independence from the central government and its relation to inflation, money growth, and economic development an interesting area of research. Some empirical work (Bade and Parkin, 1982; Grilli, Masciandaro, and Tabellini, 1991; and Alesina and Summers, 1993) argued that the more independent a central bank is, the lower money growth and inflation rates are, leading to a greater monetary stability. As a result, these studies found that central bank independence has a positive, and a negative relation with monetary stability and inflation, respectively. On the other hand, Cukierman's (1992) investigated a broad sample of sixty-seven countries from 1950 to 1980 and his findings reported an insignificant correlation between central bank independence and inflation.

Bruno and Easterly (1996) found that there is a short-run inverse relationship between inflation and economic growth. They noted that this finding is contrary to popular economic thinking that the two variables correlate positively with each other in the short-term. Further, their results showed that there is no long-term inverse link as countries suffering from inflationary problems eventually recover. Motley (1998) applied a Solow growth model across countries to estimate the effects of inflation on real growth and found that the 5 percent reduction in inflation from the 1970s to the 1980s would increase per capita GDP by between 0.1 and 0.5 percent. This effect would be worth between 15 and 140 percent of one's year income; thus suggesting that the benefits from getting inflation down—although it might occur slowly and for a long period—may exceed the short-term costs of doing so.

## **II.E. GAP IN THE LITERATURE**

As discussed in this study, economic growth literature has gone a long way. Unlike the models of the 1950s and the 1960s, growth theories of the 1990s are expected to last longer and keep the momentum going by narrowing the gap between theory and empirical research. However, within the framework of this study,

efforts could be spent to fill some voids in the literature in order to improve the dynamics of long-run economic growth environment.

First, the role of trade openness has not been sufficiently explored in the new growth theory in such a way to complement the terms of trade, and may be to replace the traditional role of investment (a plausible inverse temporal causality between investment and growth). Second, not enough empirical work has been done on exploring the depth of regional integration and its impact on steady-state growth within the new growth framework. Third, although the role of government has been considered in growth models by some scholars, its role is still inconclusive and somehow cumbersome due to its complex derivations—democracy, monetary and fiscal policy, regulation, and so on. For instance, recent studies included government spending, rule of law, and inflation variables in growth regressions. However, this inclusion did not cover adequately the broader role of government policies as reflected by political, economic, and financial factors. For example, recent findings have indicated that inflation has most probably had an insignificant correlation with long-run growth; thus replacing inflation by a better proxy for monetary policy might be desirable. A broader, yet simpler, role of government may be developed to integrate the increasing impact of government policies on growth. All the above-mentioned potential gaps will be discussed in detail in the next chapter of this study.

## **II.F. SUMMARY**

This second chapter reviews the literature of economic growth since the early *Mercantilist* days of Thomas Mun until the new growth theories of the 1990s. It focuses on theories of modern economic growth since the 1950s and synthesizes the two major avenues of neoclassical and endogenous models. The chapter continues by introducing the new growth models that were developed from previous, as well as new growth theories. Then, the evolution of determinants of growth is examined accompanied with major findings and contributions. These sources of growth included: physical capital; human capital (education and life expectancy); interaction between physical and human capital;

fertility rate and population growth; terms of trade; investment, including private and public investment; infrastructure; spillover effects; scale effects; regions; agglomeration; financial development; and the role of government.

The role of government is subdivided into: government expenditures—including defense and education spending, market distortions, political instability, trade and tariffs, democracy, the rule of law, and inflation. The chapter ends with three identified gaps in the literature: the need for more empirical studies that would examine the role of trade openness as complementary to terms of trade; the lack of enough quantitative work that would examine the impact of different levels of regional integration on growth—within the new growth framework; and the need for parsimony when integrating the complex role of government in long-run growth regressions.

### III. METHODOLOGY

This chapter begins by laying out the design and sample of this empirical research. Then, it presents the model, and states the problem and sub-problems of this study. This is followed by setting up the hypotheses that will be tested by the model in the next chapter in an attempt to offer a solution for the pertinent sub-problems, and fill in some gaps in the literature. Further, a separate section identifies the independent and explanatory variables pertaining to regression equations. In addition, this chapter investigates the data collection and measurements, and ends with a summary.

#### III.A. DESIGN AND SAMPLE

This cross-country study starts initially by collecting data on twenty countries for a period of sixteen years ranging from 1982 to 1997.<sup>3</sup> This panel setup of 320 observations (20 countries \* 16 years) combines cross-sectional (between countries) with time-series (within countries) sample information. Due to the underlying long-run growth theoretical framework of this work and following Barro's approach (1997), the model categorizes the pertinent determinants of growth into initial and steady-state positions in the following form:

$$\Delta\gamma = f(\gamma, \gamma^*) \quad (3.1)$$

Where  $\Delta\gamma$  is the growth rate of per capita GDP,  $\gamma$  is the initial level of per capita GDP, and  $\gamma^*$  is the long-run or steady-state level of per capita GDP. Note that the growth rate,  $\Delta\gamma$ , is diminishing in  $\gamma$  for given  $\gamma^*$  and rising in  $\gamma^*$  for given  $\gamma$ .

This empirical approach allows the model to estimate the effects of the initial determinants—those variables that take time (years) before they change significantly such as fertility rate, life expectancy, education, and initial individual income—on subsequent growth rates (Mankiw, Romer, and Weil, 1992). Additionally, the model allows us to examine the impact of the steady-state variables—variables that inherent the long-term nature of the theory, and hence are averaged over 1982-1997 such as the dependent variable economic growth, and the explanatory variables: government expenditures, trade openness, investment, terms of trade, and stability.

Consequently, this study breaks down the sixteen years into four equal periods by transforming all annual steady-state (long-term) variables into periodic ones—expected values of every four consecutive years, while sorting the initial year (first year) of each period of some control variables, such as per capita GDP, fertility rate, education, and life expectancy. Therefore, the panel data is being transformed from three hundred and twenty observations into eighty (20 countries times 4 periods).

On another hand, this research does not use a longer period because from this perspective, the selected sample and years under study are not expected to include relatively major shocks. More interestingly, the current phenomena of globalization, technological progress, higher speed and lower costs of communications, more reliance on international trade and FDI, greater vulnerability to Contagion effects, and so on, shortened the traditional perception of the “long-term” period. Moreover, the design would benefit more from the larger number of information.

The sample of twenty countries is selected as follows from the four regional integration blocs under study: a) all three members of NAFTA—US, Canada, and Mexico; b) all four major members of MERCOSUR—Brazil, Argentina, Uruguay, and Paraguay; c) the five major members of ASEAN—Indonesia, Malaysia, Thailand, Philippines, and Singapore; d) eight out of the fifteen members of the EU are randomly selected—Germany, France, UK, Italy, Spain, Ireland, Portugal, and Greece. These geographic regions are selected due their convenience and data availability, especially for measures of life expectancy and education.

### **III.B. MODEL AND HYPOTHESES**

This study adopts the “new growth” model developed by Barro and Sala-i-Martin (1995; 1997), and extends it in an attempt to replace the role of investment by trade openness, incorporate the depth of integration, and include a broader role of government. As previously mentioned, this new growth paradigm was reflected through a framework that combines the long-run growth of the endogenous models (from the discovery of ideas in the rich developed economies) with the convergence property of the

neoclassical growth theories (from the gradual imitation by followers). This extended version of the new growth model uses a multivariate double-log regression represented by the following equation:

$$\text{Log } \Delta \gamma p = \beta_0 + \text{Log } \beta_1 \gamma t-4 + \text{Log } \beta_2 \text{edu } t-4 + \text{Log } \beta_3 (\gamma^* \text{edu}) t-4 + \text{Log } \beta_4 \text{lif } t-4 + \text{Log } \beta_5$$

$$\text{fert } t-4 + \text{Log } \beta_6 \text{Gexp } p + \text{Log } \beta_7 \Delta \text{tmtrade } p + \text{Log } \beta_8 \text{open } p + \beta_9 \text{integ } p + \text{Log } \beta_{10} \text{Stab } p + \varepsilon$$

For country  $i$  (3.2)

Whereas the dependent variable is represented by:

$\Delta \gamma$ : Growth rate of real gross domestic product (GDP) per capita, measured by percent.

And  $\beta_k$  is the estimated coefficient of each of the following independent and explanatory variables:

a) Independent control variables at initial levels:

$\gamma$ : Lagged real GDP (or income) per capita, measured by US \$, also used as a proxy for physical capital.

$\text{edu}$ : Lagged enrollment in total (male and female) secondary education, measured by percent.

$\gamma^* \text{edu}$ : Interaction between physical capital and human capital (only education), measured by the product of lagged real GDP per capita and lagged secondary school enrollment.

$\text{lif}$ : Lagged life expectancy, measured by the expected number of years to live, also used as a proxy for health.

$\text{fert}$ : Lagged fertility rate, measured by the U.N. as the typical woman's prospective number of live births over her lifetime, used also as a proxy for population growth.

b) Independent control variables at steady-state levels:

$\text{Gexp}$ : Government expenditures as a percentage of GDP.

$\Delta \text{tmtrade}$ : Growth rate of terms of trade. The terms of trade is measured by the ratio of export to import prices.

c) Explanatory variables at steady-state levels:

*open*: Trade openness, represented as the steady-state sum of import and export as a percentage of real GDP.

*integ*: An ordinal variable indicating the degree of regional integration. This variable ranges from 1 to 4 representing no integration as “1”, up to a common market and economic union as “4”.

*stab*: Represents a proxy for the level of political, financial, and economic stability. This steady-state proxy is measured by the composite risk rating (CRR), an index published by the International Country Risk Guide.

$\varepsilon$ : Stochastic error term.

All variables are estimated for a period “p” (indicating the expected value of a 4-year period) or “t-4” (implying a 4-year lag or the initial year in a 4-year period) and country “i”.

All coefficients pertaining to the above-stated regression equation are estimated using a simple ordinary least squares (OLS) technique applied in a seemingly unrelated (SUR) framework, and the panel setup is sorted by country, which differs from a pure cross-sectional approach. This choice was made over alternative advanced techniques such as: least squares dummy variable (LSDV)—which takes into account time-series’ and individuals’ error terms; rolling regressions (RR)—which only selects individual time periods with significance, while correcting for the error term; and simultaneous equations (SE) in a SUR framework—which combines cross-sectional with time-series data, while accounting for instrumental variables; cointegration; and first difference (FD) for the following reasons.

For instance, RR, cointegration, and FD techniques rely more on time-series information; that they eliminate the cross-sectional information, which is the principal strength of this cross-country study. Therefore, these techniques tend to emphasize measurement



error over signal. Furthermore, a simple OLS technique used in a pure cross-sectional data that contains one observation for each country—where the system uses means of all variables, would most probably result in estimation errors. Then, when used in a panel data, the SE-SUR technique works as a weighted combination of both cross-sectional and time-series information.

Subsequently, one would rapidly conclude that the SE-SUR is relatively the superior choice. However, in this framework, OLS-SUR can also be used in a panel setup once data are sorted by country (and not by period, where time-series techniques could become much more preferable) to avoid serial correlation in the error term, and once steady-state and initial levels are properly incorporated. Thus, benefiting from both cross-sectional, as well as time-series information.<sup>4</sup>

Moreover, several studies showed that in a similar framework, there are no significant differences between OLS and SE as compared by Wald tests of equality of the coefficients, and as long as the errors are assumed to be independent over the time periods. In addition, the First difference technique appeared to be less desirable in this setting than OLS and SE. Accordingly, this study uses OLS-SUR to estimate its panel data as sorted by country; thus, benefiting from the rich informative nature of a panel setup, and at the same time emphasizing on the pertinent cross-sectional information.

Due to the potential problem of heteroskedasticity in this framework, the use of OLS-SUR is also supplemented by following White's procedure (1981), which gives heteroskedasticity-robust estimates for the variance-covariance matrix of the estimated regression coefficients.

The problem under study is how to increase the long-term economic growth per capita. This problem is divided into three sub-problems: 1) Does trade openness stimulate economic growth per head? 2) Does regional integration enhance growth? 3) Does stability, as initiated by government political, economic, and financial policies, promote steady-state growth?

Subsequently, this study attempts to solve the above-mentioned three sub-problems by testing the following hypotheses:

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- 1) As trade becomes more open, growth rates per capita rise.
- 2) As regional integration increases, growth rates per capita increase.
- 3) As government provides a greater political, financial, and economic stability, economic growth increases.

Moreover, this work attempts to fill in some gaps in the recent growth literature. First, by exploring the increasing role of trade openness in growth models, and maybe to partially replace the traditional “overestimated” role of investment (though as a reminder, its temporal causality is still inconclusive!). Second, by investigating the depth of regional integration and its impact on steady-state growth within the new growth framework. And last but not least, by incorporating a broader, yet simpler, role of government policies that cover pertinent political, financial, and economic factors.

### **III.C. INDEPENDENT CONTROL VARIABLES (initial level)**

#### **III.C.1. INITIAL GDP PER CAPITA**

The first important element of growth should have been physical capital, however, available data on it seems unreliable, especially for developing countries, because these data rely on arbitrary assumptions about depreciation and inaccurate measures of stocks and investment flows. Therefore, growth literature used initial real GDP per capita to reflect stocks of physical capital and natural resources, effort, and the unobserved level of technology. In consistence with neoclassical theories, this study offers the initial level of GDP per capita in logarithmic form (or natural logarithmic), with its coefficient indicating a conditional rate of convergence.

Within this context, the focus is on conditional convergence and not any other form (absolute or club convergence). In fact, the convergence property has a strong empirical support in many cases except in Sub-Saharan Africa, mainly because it is conditional to other factors such as government policies, fertility rates, terms of trade, and other environmental variables. Another reason for this conditional convergence, which is sometimes unmet like in the case of Sub-Saharan Africa, is that the steady-state level of output (or GDP) per capita does not exceed the initial or current positions of such countries or regions. Thus, conditional convergence works reasonably in a mechanism where the growth rate of output per capita is a function of both, the initial and the steady-state levels of output per capita. Holding constant environmental variables, a higher initial level or a lower steady-state position of output per capita implies a lower per capita growth rate. This mechanism corresponds to conditional convergence, and explains why some poor countries like in Sub-Saharan Africa with low initial income per capita still do not grow rapidly—mainly due to their low steady-state positions.

Subsequently, the empirics of this work expect a negative relationship between the initial GDP per capita and the growth rate per capita. Thus, as the former starts at a lower level, the latter tends to increase more, holding everything else constant. The initial years (for GDP per capita, education, and life expectancy) of this data set

corresponds to 1982, 1986, 1990, and 1994 for the 1982-85, 1986-89, 1990-93, and 1994-97 periods, respectively.

### **III.C.2. INITIAL LEVEL OF EDUCATION**

One of the most important elements of human capital is education. This study measures education by the total (female and male) percentage of secondary school enrollment due to the unavailable resources in hand to use the relatively preferable educational attainment measures constructed by Barro and Lee (1993) and employed by the World Bank. An increase in the initial level of education—especially, secondary education—is expected to increase the long-run growth per capita. According to growth literature, it would have been much more preferable to use only male instead of total school enrollment, but the lack of a breakdown of this variable for many countries in early years led to the use of the more accessible—though less preferable—total school enrollment.

In most reported studies, female school enrollment appeared to have no effect on growth, but the role of this variable could have a negative causality with fertility rates, infant mortality, or political freedom (Schultz, 1989; Behrman 1990). Further empirics (World Bank, 1998) reported that mother/female education reduces child mortality through enabling mothers to raise healthier children. More surprisingly, some research (Barro and Sala-i-Martin, 1995) found female education with a high significant and negative impact on growth, while male secondary and higher education were found, respectively, statistically and substantively positive and significant. These findings were interpreted in that the large spread between male and female education attainment is a measure of backwardness; thus, less female education signifies more backwardness, which allows for higher growth potential according to the convergence mechanism.

In general, international educational measures, whether school attainment or enrollment fall short than expected and are mostly inaccurate because they do not capture the quality of education and they are not properly standardized across countries. For instance, in a recent article entitled “Problems with international measures of education” (2000), Kerckhoff and Dylan noted that comparative studies often use standard measures of educational attainment.

However, they discussed the weaknesses and observed that: 1) translating the indigenous credentials into the standard categories can lead to very different distributions of similar countries' populations in the standard categories; 2) reclassifying the indigenous credentials into the standard categories appears to follow different decision rules in different countries; 3) the heterogeneity of the indigenous credentials combined into the standard categories tends to distort cross-country similarities and differences. Kerckhoff and Dylan concluded that despite recent efforts, problems with international measures of education still persist and they called for further efforts to improve these measures. Another problem with education measures is the fact that they are unavailable for many developing countries and are sometimes measured every three or more years.

Furthermore, higher rates of school enrollment or attainment may not stimulate growth if the quality of education is poor, or if some distortions in the labor market affect full potential employment. Still other researchers used public expenditures on education as a proxy to measure education and quality of education in particular, but this measure did not appear to be robust enough to hold scrutiny. For instance, Beanton and others (1996) reported a lack of causal relationship between public education spending and the quality of education (measured by mathematics test scores) for a sample of thirty-four countries for 1994-95.

### **III.C.3. INTERACTION BETWEEN EDUCATION AND GDP PER CAPITA**

The estimated coefficient of the interaction term between lag total school enrollment and lag log GDP per capita implies that more education would increase the magnitude of the convergence coefficient. The effect of this interaction term is used to capture the speed of convergence. However, since as discussed earlier, cross-country measures of education might be inaccurate, thus this interaction term might also be unreliable. Still the use of both variables, education and the product of education and income, is essential to explain growth models from a theoretical perspective as well as from an empirical one, where these two variables can not be omitted in order to avoid any specification error.

In growth regressions, this interaction term is expected to have a negative relationship with steady-state growth rates. Further, some

empirical studies (Barro and Sala-i-Martin, 1997) viewed the interaction term between physical and human capital (education and/or life expectancy) in terms of the technological diffusion effect.

### **III.C.4. INITIAL LEVEL OF LIFE EXPECTANCY**

The other important element of human capital is life expectancy, measured by the expected number of years to live. This measure is a proxy for health, and could be also used to measure the quality of human capital. Some difficulties also occur in the unavailability of its annual frequencies in some developing countries (but of course not as problematic as the measures of education).

A higher initial level of log life expectancy is expected to increase the steady-state growth per capita, holding other independent variables constant. The effect of this variable reflects a better and longer health; thus, an increase in the quality and productivity of the labor force.

### **III.C.5. FERTILITY RATE**

Fertility rate is lagged in this study and enters the model at its initial level reflecting the minor contemporary changes in population growth rate, net immigration, or “normal” mortality rate that occur to an average country. According to the United Nations (U.N.), fertility rate is defined as the typical woman’s prospective number of live births over her lifetime. As discussed earlier, fertility rate is also used as a proxy for population growth. When the population grows, aggregate investment tends to be used by a larger labor force instead of providing more capital to improve skills, resources, and productivity of the existing workers. Therefore, population growth has a negative effect on the steady-state position of output per labor, holding other variables constant.

Growth models view population growth as exogenous, and fertility decisions as endogenous. The endogeneity of the fertility variable is also shown through its negative correlation with female primary education (Schultz, 1989; Behrman, 1990; and Barro and Lee, 1994). The estimated coefficient of fertility rate has a negative impact on growth rates.

## **III.D. INDEPENDENT CONTROL VARIABLES (steady-state level)**

### **III.D.1. GOVERNMENT EXPENDITURES**

The variable “government expenditures” enters into this study’s regression as the total government consumption percent of GDP, it is then computed as the period average to reflect its long-run position. Large public (non-capital) spending is perceived as a source of big government, fat bureaucracy, less efficiency, more market distortion, and so on. Eventually, taxes are raised to finance this spending and the allocation of society’s resources becomes increasingly Pareto inferior. Thus, nonproductive government expenditures hinder economic growth, and enter into this study as inversely related to growth per capita.

Some researchers used government expenditures net of defense and education spending, and postulated that such outlays do not impede growth. Moreover, they argued that public spending on defense, education, public housing, health, and other social amenities are not properly viewed as consumption and might have direct effects on productivity or security of property rights; thus, viewed as a kind of investment.

On the other hand, empirical studies showed that if the goal was to improve security and property rights, then government spending on defense could indeed have a positive effect on national security, but still not a direct significant impact on growth. However, if the goal of increasing public spending on defense is related to a military threat or war, in that case, such expenditures could have a negative but insignificant impact on growth. Barro and Sala-i-Martin (1995) found the overall (for security or war reasons) effect of government expenditures on defense statistically insignificant.

Government spending on education is also not necessarily productive, and might not have a positive significant effect on economic growth. Some scholars used public expenditures on education as a proxy for the quality of schooling (Barro and Sala-i-Martin, 1995). However, this proxy does not have enough empirical evidence. In particular, when the main objective of spending is to improve the quality of education, studies show no sign of significant causality.

For instance, Beanton and others (1996) found that public expenditures on education do not guarantee quality education measured by mathematics test scores. Public spending on education does not necessarily stimulate growth, except maybe in the case of providing universal access for basic education (via public schools) in underdeveloped countries or rural areas. Interestingly, recent studies (Lall, 1998) showed that a greater enrollment in majors such as mathematics, science, and engineering could foster growth (positive impact, though not significant) through providing a more technically skilled labor force.

This empirical work deals with the variable “total government expenditures” due to the following reasons: 1) the productivity of public spending on defense and education is still inconclusive; 2) the sample under study covers a wide array of specific circumstances in regards to education and defense; 3) many years included spending on education with many other social amenities in one variable, which would make it inaccurate to break this variable down.

### **III.D.2. GROWTH RATE OF TERMS OF TRADE**

The terms of trade environmental variable is measured by the ratio of export to import prices. In this study, the yearly growth rate of the terms of trade is computed as the change over the previous year. Then, this variable is transformed into the expected value of a 4-year period to reflect its long-run theoretical role. The inclusion of the growth rate of terms of trade is important to growth regressions in that it complements the role of openness—which will be discussed in the next section.

In addition, the change in terms of trade has a substantial influence on developing countries, which specialize their exports in a few primary products. Movements in real GDP occur only if the shift in the terms of trade stimulates a change in domestic employment and output. The growth rate of the terms of trade is regarded as exogenous and its estimated coefficient has usually a positive impact on long-run growth per capita.



### III.D.3. INVESTMENT

Traditionally, investment was perceived as one of the essential determinants of growth. Even recent empirics in fast growing Southeast Asian countries showed a substantial correlation with investment. However, this could possibly mean that due to the growth potential that this region was experiencing, there was more attraction to foreign as well as domestic investments; thus, the direction of causation is not yet clear.

Furthermore, the bulk of recent empirical work implied that investment by itself is not an essential element of growth. For instance, Kenny and Williams (1999) reported that investment alone could not account for variation in growth. They argued that the popular development models in the 1950s and 1960s made the focus on investment a major objective and this would lead to missing other important aspects of development. They noted that although investment correlated highly with growth since 1960s, it does not explain it.

In fact, a large volume of studies in the 1990s implied that it is more plausible that growth causes investment rather than the reverse (Blomstrom, Lipsey, and Zejan, 1993; Barro and Sala-i-Martin, 1995; and Barro, 1997). This study expects that openness might suck a substantial portion of the explanatory power of investment due to the important effect that a freer flow of goods and services can have in an open economy. In this case, trade liberalization can open greater opportunities to attract new FDI and stimulate domestic investment. This might occur through the process of re-allocating efficient resources where some industries are shut down to be replaced by new ones—according to the mechanisms of comparative and competitive advantages explained earlier in this study. Therefore, within this theoretical context, trade liberalization seemed to spur investment rather than the reverse.

Accordingly, this work will initially try to include both, investment and trade openness. But on the ground of its extended theoretical framework, this research argues that since investment might be suck by the hypothesized strong effect of openness and its causality with growth might be reversed; thus, investment will be excluded from the final equation.

### **III.E. EXPLANATORY VARIABLES**

This study endeavors three hypotheses to be tested by the extended version of the new growth model. Each of these three hypotheses incorporates an explanatory variable (trade openness, regional integration, and stability) with a steady-state position.

#### **III.E.1. TRADE OPENNESS**

The first explanatory variable is trade openness, which is measured by the yearly sum of exports and imports as a percent of GDP, and then transformed into the means of every 4-year period. The openness variable enters the growth regression and its estimated coefficient is expected to have a significant positive impact on growth rates, holding other independent variables constant.

Emerging economies have been lately putting more emphasis on trade liberalization, and the share of their international trade to GDP has been consistently increasing. This trend has been strengthened thanks to the tangible benefits that these countries experienced from increasing their exports, improving their production standards to meet international requirements, and exposing domestic consumers to lower prices and greater varieties due to fiercer foreign competition in some industries like services, agriculture, and hi-technologies.

The evolution of trade policy and its impact on the economic environment has been analyzed by many researchers and showed a shift from exports to openness—exports plus imports. For instance, Frankel and Romer (1999) brought up strongly the relationship between trade openness and per capita income growth. Edwards (1993) found that trade openness and not just export policies have a significant positive effect on economic growth.

Furthermore, Liu, Song, and Romilly (1997) evaluated the causal relationship between openness and economic growth in China, and identified a bi-directional causality between the two variables. It has also been argued that the impact of trade liberalization on long-term growth depends on the initial level of protection (Baldwin and Forslid, 1999) and that openness can spur growth endogeneously via a pro-competitive effect in the R&D and/or financial sectors (Baldwin and Forslid, 2000).

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Although a considerable amount of research has been conducted to demonstrate the significance of openness and its rising role in growth models, this study suggests that still more efforts should be spent on using openness in different frameworks and with a more complementary set of determinants. In its turn, this study attempts to include openness in the new growth model, while controlling it by the complementary variable: contemporaneous terms of trade. In favor of this logic, Lutz and Singer (1994) contended that terms of trade considerations should be included in the assessment of trade openness policies and that these effects might rise considerably when several countries liberalize simultaneously. In this same context, openness could even assist to persuade those studies that are still using investment as a main source of growth, to reconsider its role in their equation, since as it was discussed in a previous section, openness could spur investment (especially, FDI), as well as growth.

### III.E.2. REGIONAL INTEGRATION

Various degrees of regional integration exist and they are all referred to as regional trading arrangements (RTA) or trading blocs. Starting from the lowest to the highest degree of fusion and commonality in economic purpose, they include the following (Swanson and Kapoor, 1996):

- 1) **Preferential Trading Arrangement (PTA):** The members have a different (lower) tariff between them as compared to the rest of the world.
- 2) **Free Trade Area (FTA):** The signatories have a zero tariff on each other's goods.
- 3) **Customs Union (CU):** They are FTAs but with the same external trade measures for all the members.
- 4) **Common Market (CM):** There is unrestricted movement of factors of production and products between member countries.
- 5) **Economic Union (EU):** It is a CM with further commonality and fusion in terms of micro and macroeconomic policies.

Economists have been generally unenthusiastic about regional integration for two main reasons: it creates "trade diversion" (where

preferential tariffs will cause trade to flow inefficiently) and threatens global trade liberalization (efforts to make one worldwide trading bloc). For instance, Jagdish Bhagwati, a prominent international economist from Columbia University, has repeatedly said that all forms of regional trade arrangements are “stumbling blocs” rather than “building blocs” in the freeing of global trade. From a similar growth perspective, some recent empirics (Vandhoudt, 1999) employed the “new growth” model and found that the unification of Europe has increased trade flows but did not result in a faster increase of per capita income.

Despite all the skepticism about regional integration, this study attempts to show that the deeper degree of regionalism, the more positive effect it has on long-term per capita growth across countries. In fact, some empirical research, though on a more limited case, postulated that on welfare grounds a customs union is always Pareto-superior to an FTA, and that the political economy of FTAs will lead to more opposition to further multilateral trade liberalization than will customs unions (Krueger, 1997). Similarly, Grinols (1993) contended that in the case of the European Community (EC), the move from customs union to common market may open many opportunities for welfare improvement. Henrekson, Torstensson, and Torstensson (1997) also found that regional integration has positive effect on growth, as well as on resource allocation.

Furthermore, this study advocates the idea of “open” regionalism in that signatories can benefit from efficiencies available outside the bloc; where the bloc keeps down trade barriers with non-signatories, especially on goods where nonmember countries may have a comparative advantage. In addition, if trade diversion still occurs as a result of integration, then net positive spillovers (such as FDI, technology, structural adjustments, and so on) could outweigh any loss, and eventually increase long-term per capita growth rates.

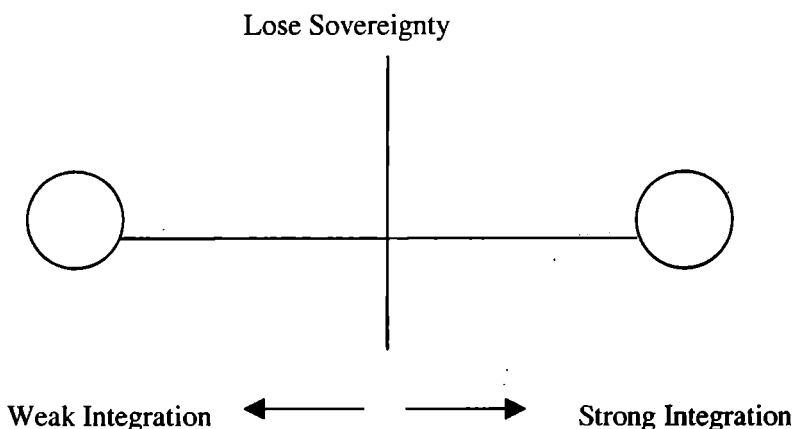
Past studies measured integration or regional integration by proxies of continuous variables, such as trade openness, ratio of FDI to GDP (Brahmbhatt and Dadush, 1996), changes in tariff rates and preference margins, changes in non-tariff barriers (VER, quotas, etc.), and so on. However, it is argued in this research that measuring regional integration would be better on the basis of ordinal, nominal, or dummy variables in order to capture a wider

range of observable, as well as non-observable factors that such a pact can affect.

For instance, by December 1994, although tariffs were already cut considerably among MERCOSUR members, high tensions between the two rival members Brazil and Argentina—over joining or not joining NAFTA—still persisted. Not until January 1995 (just one month later!) and when the move from FTA to customs union was signed into an agreement, that these tensions were reduced and a greater mutual preferential relation took off between all four members of the bloc. In a similar context, Fernandez-Arias and Spiegel (1998) investigated the implications of a North-South trade arrangement, and found that the presence of sovereign risk—in the Southern partner nation—enhances the potential for regional trading blocs to increase the welfare of bloc members.

Alternatively, there is a general belief that deeper regionalization tends to weaken the national sovereignty of country members (e.g. EU), but this is not necessarily the case like with NAFTA (Mehanna, 1999). The following figure shows a conceptual scheme as proposed by Urwin (1995) who argued against “moderate” degree of integration (figure 1):

**FIGURE 1. Integration and Sovereignty**



The logic behind this work’s advocacy to open regionalism is multifaceted. It is argued that regional integration encompasses more than the traditional fundamentals of improving the efficient

allocation of resources (according to the comparative advantage concept); reducing transport costs due to agglomeration forces as described in economic geography and the factor 'distance' (this factor is found in the Gravity model and some other trade models); and achieving economies of scale due to specialization.

As a matter of fact, regionalism has much more positive or negative effects on several activities, such as trade flows, FDI, technological spillovers, illegal migration, transportation and safety standards, labor mobility, drug-trafficking, endangered species trafficking, energy, security issues, cultural and educational externalities (language, fashion, music, etc.), sovereignty risk, stability, and so on.

What is interesting in this study is that the pertinent methodology employs the regional integration as an ordinal variable with a scale of 1 (no integration) to 4 (common market or economic union). This employed ordinal variable helps to account for deeper levels of fusion; captures the broader effect of trade agreements; and enables to find the means of each of the four periods ranging from 1982 to 1997.<sup>5</sup> In due course of this chapter, a more detailed description of the degrees, blocs, and countries will be available in a separate table.

The integration variable is expected to have a positive link with growth rates, once other variables are held constant. In addition, regional integration data were collected and assigned a value from 1 to 4 according to their degree of integration, and the date of signing the agreement by using a year rounding-up technique. For example, if a pact was signed in August 1992, it will be entered in the system as 1993. This makes more sense, since anyway it takes sometime after the pact is signed to implement its technicalities or put it into effect.

The following table (Table 1) includes information about the degrees of integration as assigned to a 4-scale, signatures' or effective dates of trading blocs, and other pertinent remarks.

**TABLE 1. Degrees of RTAs and Dates of Memberships**

<i>Degree of Integration &amp; [Scale Coding]</i>	<i>PTA &amp; partial FTA [2]</i>	<i>Full FTA &amp; Customs Union [3]</i>	<i>Common Market &amp; Econ. Union [4]</i>
<b>RTA</b>			
<b>NAFTA</b>	US, Canada (1989)		
<b>ASEAN</b>	Mexico (1993) Indonesia, Malaysia, Thailand, Philippines, Singapore (1994) *ASEAN was established (1967). *Expected full FTA (2005)—if not before.		
<b>MERCOSUR</b>	Brazil, Argentina, Uruguay, Paraguay (1991)	Brazil, Argentina (1995) Uruguay, Paraguay (1996)	
<b>EU</b> *European Steel & Coal Community (1951) *Treaty of Paris, effective (1952)	Germany, France, UK*, Italy, Spain, Ireland, Portugal, Greece  *EEC (early 1960s) *EC (1968) *EFTA including UK joins EC (1972)	EC (Mid 1970s) *All intra-tariffs were eliminated.  *Monetary Policy: Introduction of Euro (January, 1999), except UK opted. *Expected introduction of the Euro currency (Jan., 2002)	EU: Maastricht Agreement (Dec. 1992)

TABLE 1 (continued)

Notes: (1) The symbol (\*) represents some helpful remarks.  
(2) Years earlier than PTA/FTA dates indicate “No RTA” and are coded

[1] on a 4-scale.

(3) As discussed earlier, country members included in this table represent a sample of the actual number (e.g. EU’s sample is 8 out of the actual 15).

### III.E.3. STABILITY

This study attempts to introduce a broader, yet simpler role of government in growth regressions than what is available in the current literature. One way to do it is to look at the diversified role of public policies and try to compress them into three categories: political, economic, and financial. The conceptual reasoning behind it is to investigate a common ground among these categories and assess a possible—if any—link to steady-state economic growth.

Some studies (Barro, 1997) reflected the role of government by entering one political aspect—the rule of law, which was found as the only significant one in a set of political variables, and one economic aspect—inflation. This left the study in hand with some room to explore new avenues for a better role of government policies in growth literature.

First, the role of government is very obvious from the political perspective through government stability, military in politics, religion in politics, law and order, ethnic tensions, corruption, quality of the bureaucracy, expropriation risk, repudiation of contracts by governments, and so forth. Democratic regimes are not necessarily better than relatively authoritarian ones in regards to economic growth and too much democracy might even hamper growth if economic distortions become encouraged.

In fact, Political stability and credibility can be the major players to stimulate growth. For instance, Borner, Brunetti, and Weder (1994) compared the economic development between the democratic LDC's in Latin America and the relatively authoritarian LDC's in Southeast Asia, and argued that political credibility and stability are the main characteristics that enable the Asian countries to outperform their Latin American counterparts. Moreover, Devereaux and Wen (1998) found that political instability leads to both lower growth rates and higher government spending.

Second, the economic side of government policies is reflected by inflation, monetary and fiscal policies, unemployment, current account balance, income distribution, market distortions and regulation, taxation, and so on. Some studies included inflation in their growth models, however little evidence is found to indicate a



negative relationship between inflation and economic growth. For example, Bruno and Easterly (1996) found no inverse link between inflation and long-term growth as countries suffering from inflationary problems eventually recover.

Hence, it is argued here that what matters most for growth might be a stable inflationary environment rather than a low one. Interesting to the quest of this research, Levine and Zervos (1993) showed that it is hard to find a relation between indicators of national policies (especially monetary and fiscal policies) and long-term growth.

Third, the financial role of government covers various aspects, such as banking reforms, accounting standards, stock market liquidity, international financial flows of capital and other instruments, exchange rate stability, foreign debt service, and so on. Empirical evidence supports the belief that stock market liquidity and banking development stimulates steady-state growth per capita (Levine, 1996; 1998).

After laying the three categories of government policies in a growth framework, this study argues that “stability” could be treated as the common ground between political, financial, and economic factors; thus, providing a broader and parsimonious role of public policies in regards to growth regressions. However, measuring political, economic, and financial stabilities is another problematic task.<sup>6</sup> For this reason, it is assumed that risk can be an adequate proxy for stability; therefore, greater stability implies less risk.

According to this reasoning and assumption, country risk data of the Composite Risk Ratings (CRR) will be employed and borrowed from the International Country Risk Guide (ICRG), a publication made for investment purposes, which includes political, economic and financial risk data (ICRG, various years).

The political, economic, and financial risk ratings are determined by adding together the ratings assigned to each individual risk component within the risk category—an example of political risk components: government stability, socioeconomic conditions, investment profile, internal and external conflicts, corruption,

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military and religion in politics, law and order, bureaucracy quality, and so on—to produce an aggregate risk rating in which the higher the rating the lower the risk and vice versa. The CRR overall degree of risk can be identified as follows:

to 49.5 points -----	Very High Risk
50.0 to 59.5 points -----	High Risk
60.0 to 69.5 points -----	Moderate Risk
70.0 to 84.5 points -----	Low Risk
85.0 to 100.0 points -----	Very Low Risk

Source: PRS group. Various years. International Country Risk Guide. New York.

The political risk rating contributes 50% of the CRR, while the economic and financial risk ratings each contribute 25%. The following formula is used to calculate the CRR:

$$\text{CRR (country X)} = 0.5 (\text{PR} + \text{ER} + \text{FR}) \quad (3.3)$$

CRR = Composite Risk Rating

PR = Political Risk Rating

ER = Economic Risk Rating

FR = Financial Risk Rating

Subsequently, one might rightly argue in favor of regressing the political (PR), financial (FR), and economic risk (ER) variables separately on subsequent growth rates rather than using the single composite variable (CRR), which encompasses all three variables.

In fact, Mehanna (2002) estimated the three risk ratings separately and later compared them with the use of the composite index (CRR), and found that the latter explains the model better while avoiding many conflicting endogeneous variables when using the three variables separately. Similarly, this study found similar results in favor of the use of the composite index due to its reliability, more relevance, and parsimonious feature.

### III.F. DATA COLLECTION AND MEASUREMENTS

The data of this empirical research is borrowed from the International Financial Statistics Yearbook, World Investment Report and Balance of Payments Statistics Yearbook published by the International Monetary Fund, and the World Development Report published by the World Bank. Other government sources for various years are being employed. The data set is being entered, processed, transformed, and computed using both SPSS and Excel programs to present the proper role of pertinent variables. For instance, the initial real GDP per capita is selected as the first year of each of the four periods after being computed by dividing real GDP over population, and then logged. The real annual growth rate of GDP per capita is found by computing the difference between GDP per capita of year (t) and its own lag (t-1), all divided by the latter lagged variable. Then, to find the periodic (steady-state) growth rate of GDP per capita, the annual values are being transformed into periodic ones by using a 4-year average moving technique, then logged. In addition, the variable "Openness" or trade openness is being computed as the sum of imports and exports divided by GDP. Measures of GDP and other relevant variables are presented in terms of real and constant US dollars.

This study employs GDP measures extensively to compute levels and growth rates of real GDP, trade openness, and ratios of investment, FDI and government expenditures to GDP. The aggregate GDP figures are borrowed from the World Bank (various years) and Summers-Heston (1991). The Summers-Heston source attempts to adjust for cross-country differences in the cost of living by using observed prices of goods and services (available from 1950 to 1988), while the World Bank approach uses domestic GDP figures and market exchange rates to compare the values of GDP across countries. The Summers-Heston procedure is probably more accurate than the World Bank because the latter might have greater cross-sectional variation as a result of its exchange rates basis. However, this will not affect results of the significance of the estimated coefficients, except maybe for their magnitudes—where the greater dispersion or standard deviation in the World Bank data might account for a smaller magnitude but similar significance results.

### III.G. SUMMARY

This chapter on methodology introduces the design by explaining the logic behind this study's long-term underlying theory and its dynamic mechanism through transforming and computing annual data into periodic ones or sorting out initial values for other variables. The panel data outset of the design provides a greater sample representation than just a cross-sectional one.

The new growth model is adopted with some extensions to estimate an improved role of trade openness, the effects of different degrees of regional integration, and a broader role of government policies. The statistical function and the equation in use represent a double-log regression form. This function includes a dependent variable (growth rate of real GDP per capita), seven independent control variables (four at initial levels and three at steady-state levels), and three explanatory variables. The technique used to estimate the effects of coefficients on growth is OLS-SUR.

The research problem at hand is stated as how to increase the long-term economic growth per capita. This problem is divided into three sub-problems: 1) Does trade openness stimulate economic growth per head? 2) Does regional integration enhance growth? 3) Does stability, as initiated by government political, economic, and financial policies, promote steady-state growth?

Subsequently, this study attempts to solve the above-mentioned three sub-problems by testing the following hypotheses:

- 1) As trade becomes more open, growth rates per capita rise.
- 2) As regional integration increases, growth rates per head increase.
- 3) As government provides a greater political, financial, and economic stability, economic growth increases.

Then, the theoretical, methodological, and practical grounds of the control and explanatory variables are explained in a way to present the pertinent determinants and to answer the question of why only these specific variables are entered in the system under their

adopted form. For example, percent of total secondary school enrollment is used instead of male secondary attainment—for practical reasons, and total government expenditures is used instead of government expenditures net of education and defense spending—for theoretical and methodological reasons. Moreover, the three explanatory variables are discussed in more detail to present their theoretical, as well as their potential methodological soundness.

A separate section of this chapter deals with data collection and measurements. It describes that the data are borrowed from different sources, such as the IMF and World Bank, and identifies some weaknesses and strengths in the process of data measurements according to different approaches. The next chapter includes the empirical findings and analysis of this research.

## IV. EMPIRICAL ANALYSIS

This chapter opens with restating the purpose of this study and its hypotheses, in addition to investigating the econometric regression results of the developed version of the new growth model. It estimates sequentially the various determinants of growth in six consecutive models allowing the inclusion of each of the explanatory variables to reach the final suggested equation (benchmark model 6). Each of the six models is analyzed and discussed separately.

The first model includes the control variables. The second model introduces investment to the equation, whereas the third model adds openness to show the interaction between the two added variables: investment and openness. Model 4 drops investment out and keeps openness. Model 5 adds to model 4 the regional integration variable. And finally, model 6 introduces stability as an additional variable to model 5. The chapter ends with its own summary.

The purpose of this study is to identify the effect of trade liberalization, regional integration, and role of government policies on long-term per capita economic growth across countries. Subsequently, it attempts to answer some questions, such as: 1) To what extent does the broader role of openness affect long-run economic growth? 2) Does a deeper level of integration generate greater welfare? 3) To what extent do political, macroeconomic, and financial stabilities affect growth? 4) How much does stability cover the broad role of government and its explanatory impact on welfare?

This study attempts to develop an extended version of the new growth model and adopt it to test the following three hypotheses:

As trade becomes more open, growth rates per capita rise.

- 1) As regional integration increases, growth rates per head increase.
- 2) As government provides a greater political, financial, and economic stability, economic growth increases.

### IV.A. MODEL 1

This model includes only the control variables and takes the following regression form:

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$$\text{Log } \Delta \gamma p = \beta_0 + \text{Log } \beta_1 \gamma t-4 + \text{Log } \beta_2 \text{ edu } t-4 + \text{Log } \beta_3 (\gamma^* \text{edu}) t-4 + \text{Log } \beta_4 \text{ lif } t-4 + \text{Log}$$

$$\beta_5 \text{ fert } t-4 + \text{Log } \beta_6 \text{ Gexp } p + \text{Log } \beta_7 \Delta \text{ tmtrade } p + \varepsilon \quad (4.1)$$

The following table 2 shows the descriptive statistics pertaining to all variables used in the six models except for the investment ratio, which is entered in model 2 and 3 just for argumentative reasons and will not be included in the benchmark model (model 6).

**TABLE 2. Growth Descriptive Statistics**

*The following table shows the descriptive results of all control, explanatory, and dependent variable(s). The number of observations is eighty—20 countries from 1982-1997 arranged in four 4-year periods. The below descriptive statistics offer the dispersions (standard deviation), the averages (mean), and the minimum/maximum values of each of the cited variables.*

VARIABLE	N	Minimum	Maximum	Mean	Std. Deviation
Growth Rate per capita	80	-1.61	4.19	2.2	0.863
GDP per capita	80	-0.79	3.24	1.516	1.131
Education	80	29	107	70.325	23.671
Education * GDP per cap.	80	-42.84	325.42	126.505	107.815
Life Expectancy	80	3.97	4.36	4.266	0.077
Fertility	80	1.23	4.65	2.467	0.966
Government Expenditures	80	8.23	58.77	30.532	12.8
Terms of Trade Growth Rate	80	-12.22	12.36	0.931	4.025
Openness	80	14.64	316.34	60.093	62.405
Regional Integration	80	1	4	2.178	1.059
Stability	80	39.42	88.88	69.352	13.090
Valid N (listwise)	80				

Results of descriptive statistics in the above table 2 show that the dependent variable as represented by the natural logarithm of GDP per capita growth rate appears to have little variation and has a mean

of 2.2 and a standard deviation of 0.86. This relatively small dispersion implies a preliminary sign of no serious heteroskedasticity. Nonetheless, standard Park test is used and necessary to detect any heteroskedastic error term. On the other hand, much variation is detected in the logarithm lagged GDP per capita with a mean of 1.52 and a standard deviation of 1.13. This could reflect the diverse representation of the sample under study, which encompasses countries with different income levels per head; thus, the random selection of countries includes developed as well as developing countries.

Furthermore, Regression findings of Model 1 appear in the last two columns of table 3 and indicate that all the signs of the estimated coefficients of the control variables are found statistically significant as hypothesized, except for education that has a statistically insignificant negative sign. This unexpected negative sign may be due to the previously discussed reasons pertaining to inaccurate and unreliable measures of education, the use of both female and male education figures instead of the preferably reported male education, and the improper proxy for school enrollment or attainment in regards to quality of education. Subsequently, the interaction term—the product of education and initial GDP per capita—has also an unexpected positive sign due to the same reason pertinent to the education variable.



**TABLE 3. Growth Regression Results for Models 6, 3, 2, and 1**

The following table reports the statistical findings for: model 1 that includes all control variables; model 2 (considered as a trial model), which introduces the investment variable to the equation; model 3, which adds to model 2 the openness variable to show the interaction role between openness and investment; and model 6, which is used as the benchmark model in this study.

**GROWTH REGRESSION RESULTS FOR MODELS 6, 3, 2 AND 1**

VARIABLE	Model 6		Model 3		Model 2		Model 1	
	Coefficient	t-statistics	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	stat.
Constant	-19.107	-1.348	-23.195	-1.6	-24.067	-1.672	-20.858	1.44
GDP per capita	-1.90***	-2.98	-0.742	-1.53	-0.58	-1.293	-0.96**	2.10
Education	-0.011	-1.099	-0.012	-1.03	-0.008	-0.741	-0.012	1.16
(Edu * GDP cap.)	0.005	1.051	0.005	0.996	0.004	0.728	0.004	.74
Life Expectancy	7.28**	2.31	6.324*	1.83	4.66	1.54	5.943*	.70
Fertility	-0.68*	-1.94	-0.28	-1.32	-0.297	-1.34	-0.376*	1.75
Government Expenditures	-0.18***	-2.709	-0.07**	-2.12	-0.06*	-2.03	-0.11***	2.50
Terms of Trade growth rate	0.25**	2.15	0.14**	1.8	0.108	1.6	0.13*	.74
Investment/GDP			0.013	0.49	0.03*	1.776		
Openness	0.04***	3.09	0.008	0.98				
Regional Integration (RTA)	0.353**	2.171						
Stability	0.11***	2.76						
R-square	0.37		0.28		0.22		0.21	
adj. R-square	0.23		0.077		0.08		0.13	
F-value	4.962		1.73		1.98		2.62	
p-value of F	0.00		0.08		0.07		0.04	
DW	2.007		2.106		2.098		2.125	

Notes: The following control and explanatory variables: GDP per capita, education, the interaction term between education and GDP per capita, life expectancy, and fertility are lagged four years. The remaining control and explanatory variables are presented in four-year periodic averages. N=80 for all models. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

#### IV.B. MODEL 2

Model 2 adds the ratio of investment to GDP to the system just temporary to show its (non) relevance since this study argues against including it in the final model. This “trial” model takes the following regression function:

$$\text{Log } \Delta y p = f(X_i, I/GDP); \text{ Where } X_i \text{ represents the control variables. (4.2)}$$

As shown in table 3, this regression has an R-square of 0.22 and like the next remaining extended models there is no significant first-order serial correlation as reported by the Durbin-Watson value of 2.09. The estimated coefficient of investment is positive and has a p-value of less than 0.1. Thus, its current inclusion could be interpreted as resulting in a significant impact on growth. However, this framework calls for the importance of trade openness, especially its multifaceted role in open economies and its critical interaction with other variables, such as investment. Having said that, the next model will integrate openness along with investment in an attempt to take a closer look at their empirical behavior.

#### IV.C. MODEL 3

This model adds the variable trade openness to model 2 to take the following functional form:

$$\text{Log } \Delta y p = f(X_i, I/GDP, \text{Open } p) \quad (4.3)$$

By including both variables investment and openness in the same equation, model 3 (see table 3) shows that openness captures most of the explanatory power of the investment variable (t-statistics of investment falls from 1.78 to 0.49). In fact, both coefficients are found positive but statistically insignificant, while the other estimated coefficients of the control variables kept their expected signs. The insignificant impact of both investment and openness would give a possible explanation in that investment could have a reverse causality—as previously argued in this work.

Therefore, to give more empirical ground to this reverse relationship, the investment ratio is entered as the dependent variable and regressed on the same independent variables used in this study’s final model. Regression results of the dependent variable “investment” as reported in table 4 show that most of the

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determinants that are argued in this work as stimulants to growth rates, also appear to enhance investment with p-value of  $F < 0.001$  and R-square = 0.7.

As previously discussed in favor of excluding investment, findings show that openness has a very high significant impact on investment, and hence could open greater opportunities to encourage total foreign as well as domestic investments. Similarly, lagged GDP per capita and fertility rates are found to have significant effects on investment, while all other independent variables kept their expected signs. Therefore, the reason behind excluding investment from the final model due to its plausible reverse causation—where growth spurs investment rather than the reverse—seems to be desirable.

**TABLE 4. Investment Regression Results**

*The following table shows the effects of most of the determinants of growth used in this study once they are regressed on investment, now the dependent variable. Findings of this regression show that it is more plausible that growth leads to investment, rather than the reverse.*

**INVESTMENT REGRESSION RESULTS**

<b>VARIABLE</b>	<b>Coefficient</b>	<b>t-statistics</b>
Constant	79.79	1.205
GDP per capita	-6.148***	-2.896
Education	-0.195***	-4.147
(Edu * GDP cap.)	0.058**	2.54
Life Expectancy	-8.761	-0.549
Fertility	-3.042***	-3.701
Government Expenditures	-0.052	-1.034
Terms of Trade growth rate	0.003	0.028
Openness	0.074***	9.436
Regional Integration (RTA)	0.491	0.709
R-square	0.72	
adj. R-square	0.684	
F-value	19.978	
p-value of F	0.000	
DW	1.288	

Notes: The following control and explanatory variables: GDP per capita, education, the interaction term between education and GDP per capita, life expectancy, and fertility are lagged four years. The remaining control and explanatory variables are presented in four-year periodic averages. N=80 for this model.\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

## IV.D. MODEL 4

Within the context of this study and due to the previous discussion, model 4 with the growth rate as the dependent variable drops the investment variable and keeps (or replace it with) trade openness as in the following function:

$$\text{Log } \Delta \gamma p = f(X_i, \text{Open } p) \quad (4.4)$$

The findings (see table 5) support this logic, where the adjusted R-square—a measure that explains the *real* contribution to the model once a variable is added or removed, while R-square keeps increasing as long as we add a variable regardless of its *real* contribution—increased from 0.08 in models 2 and 3, to 0.15 in this model 4 (where investment is replaced by openness). Moreover, the R-square (0.24) in model 4 is also greater than the R-square (0.17) in model 2, where investment is added alone. In addition, the level of significance of the openness variable in model 4 (where investment is out) is greater (p-value < 0.01) than that of investment in model 2 (p-value < 0.1).

**TABLE 5. Growth Regression Results for Models 6, 5, and 4**

*The following table adds each of the three explanatory variables discussed in this study. Model 4 introduces the variable openness. Model 5 adds the variable regional integration. And Model 6, the benchmark model, encompasses all three explanatory variables—openness, regional integration, and stability.*

**GROWTH REGRESSION RESULTS FOR MODELS 6, 5, AND 4**

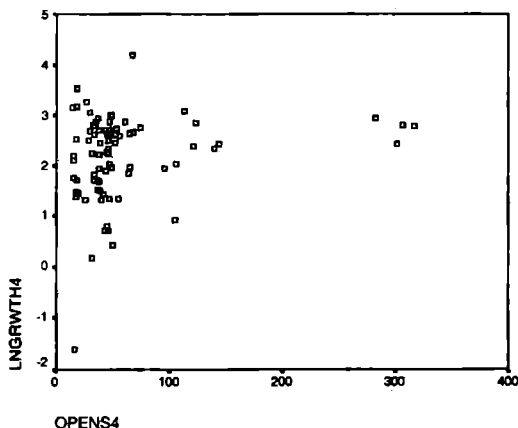
VARIABLE	Model 6		Model 5		Model 4	
	Coefficient	t-statistics	Coefficient	t-statistics	Coefficient	t-statistics
Constant	-19.107	-1.348	-19.578	-1.387	-22.238	-1.561
GDP per capita	-1.90***	-1.981	-0.88**	-1.944	0.819*	-1.788
Education	-0.011	-1.099	-0.014	-1.356	-0.014	-1.405
(Edu * GDP cap.)	0.005	1.051	0.006	1.251	0.006	1.194
Life Expectancy	7.28**	1.515	5.504	1.617	6.23*	1.815
Fertility	-0.68*	-0.94	-0.192	-1.097	-0.24	-1.362
Government Expenditures	-0.18***	-1.709	-0.019*	-1.788	-0.009	-0.976
Terms of Trade growth rate	0.25**	1.865	0.046*	1.756	0.039	1.478
Investment/GDP						
Openness	0.21***	2.899	0.015***	2.78	0.017***	2.79
Regional Integration (RTA)	0.453**	2.01	0.464**	2.09		
Stability	0.11***	0.755				
R-square	0.37		0.28		0.24	
adj. R-square	0.23		0.18		0.15	
F-value	6.22		5.13		4.37	
p-value of F	0.00		0.01		0.02	
DW	2.007		2.024		2.118	

Notes: The following control and explanatory variables: GDP per capita, education, the interaction term between education and GDP per capita, life expectancy, and fertility are lagged four years. The remaining control and explanatory variables are presented in four-year periodic averages. N=80 for all models. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

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The estimated coefficient of openness appeared significantly positive at a p-value of 0.01. This model tests and hence meets the first hypothesis of this study by finding a significant impact of trade openness on economic growth per capita, and is interpreted as follows: a one percent increase in trade openness or trade share of GDP, causes a 0.017 percent increase in income growth rate per head, holding other independent variables constant. This relation can also be seen in the below scatter plot (figure 2).

**Figure 2. The Significant Link between Openness and Growth**



#### IV.E. MODEL 5

The second explanatory variable “Regional Integration” is entered in the system by adding it to openness and the other control variables as follows:

$$\cdot \text{Log } \Delta \gamma p = f(X_i, \text{Open } p, \text{Integ } p) \quad (4.5)$$

Regression results of model 5 are shown in table 5. The R-square is 0.28, the adjusted R-square is 0.18, and no sign of significant autocorrelation seems to exist as reflected by the Durbin-Watson value of 2.02. The estimated coefficient of the regional integration variable is found positive with a p-value of less than 0.05, while the openness variable is still positively significant. All other control variables remain with their expected signs.

This model tests the second hypothesis and rejects its null at p-value less than 0.05. Accordingly, the findings show that: a deeper level of integration (e.g. from an FTA to a Common Market) increases the growth rate per capita by 0.464 percent, holding other variables constant.

#### IV.F. MODEL 6

This final model encompasses all three explanatory variables in addition to the other control variables pertinent to this research as in the following function:

$$\text{Log } \Delta \gamma p = f(X_i, \text{Open } p, \text{Integ } p, \text{Stab } t-4) \quad (4.6)$$

The inclusion of the variable “Stability” is hence estimated. This final model has an R-square of 0.37 and no sign of serial correlation.

Error terms are tested for first-order autocorrelation using a standard Durbin-Watson approach and no significant pure serial correlation is found. Further, the error terms are tested for heteroskedasticity using Park and White tests, and whenever existed (usually, heteroskedasticity does not exist in logarithmic functions), are corrected by using the weighted least squares (WLS) technique.

Results of this model reveal that the estimated coefficient of stability is positive and statistically significant as hypothesized. Therefore, this finding rejects the null and this study’s third hypothesis is met. However, since stability has not yet been examined within this growth regressions’ framework, still a possible



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explanation is that stability could be affecting some instrumental variables that lead to growth. More specifically, stability could have an indirect effect on growth through allowing an adequate environment to: spur openness; stimulate integration; attract FDI; increase foreign and domestic competition (thus, the allocation of resources becomes Pareto superior); or reduce government spending. Another possible reason of this insignificant result could be a reverse causation between stability and growth.

This suspected reverse causation is tested by entering stability as the dependent variable, which is regressed on the same independent variables in model 6 (aside from stability). Findings of the stability regression (see table 6) show that only openness has a significant positive impact on lagged stability, while coefficients of terms of trade and lagged GDP per capita are found with unexpected signs implying signs of specification errors.

This lack of support for a reverse causation implies that the significant impact of stability on growth is substantiated, and the proxy “risk” could be a reliable measure allowing parsimonious estimation and simple assessment of the complicated role of government in growth empirics.

**TABLE 6. Stability Regression Results**

*The following table shows the results of the determinants of growth (used in Model 6) once they are regressed on "stability". Findings indicate that growth does not cause stability. Thus, substantiating the results that stability spurs growth directly rather the reverse.*

**STABILITY REGRESSION RESULTS**

VARIABLE	Coefficient	t-statistics
Constant	-43.691	0.369
GDP capita	1.978	0.521
Education	-0.197**	-2.334
(Edu * GDP cap.)	0.078*	1.885
Life Expectancy	27.547	0.964
Fertility	-2.245	-1.526
Government Expenditures	-0.066	-0.736
Terms of Trade growth rate	-3.68*	-1.685
Openness	0.037***	2.652
Regional Integration (RTA)	1.014	0.818
R-square	0.759	
adj. R-square	0.728	
F-value	24.526	
p-value of F	0.000	
DW	1.193	

Notes: The following control and explanatory variables: GDP per capita, education, the interaction term between education and GDP per capita, life expectancy, and fertility are lagged four years. The remaining control and explanatory variables are presented in four-year periodic averages. N=80 for all models. \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

This study has a sample size of eighty observations and ten independent variables; thus, leaving sixty-nine degrees of freedom (80-10-1 = 69). The overall fit of all jointly estimated coefficients—as in the final model 6—is significant at p-value of F < 0.00. And results show that a one percent increase in trade share of GDP

(openness), increases growth rates per capita by 0.021 percent, while a higher degree of regional integration, increases the steady-state growth rate per capita by 0.453 percent, holding other independent variables constant. Also, a one percent increase in the composite stability index (encompassing political, financial, and economic aspects of stability) leads to a 0.11 percent increase in per capita growth.

In a nutshell, model 6 is the suggested benchmark and developed model of this study. It includes all stated explanatory and control variables, and finds that all three explanatory variables have a positive significant effect on growth, in addition to reporting the expected signs for the other control variables (except for education, as previously discussed). It may be worth to note here that if fertility and life expectancy variables are dropped from the regression, then openness, regional integration, and stability variables become statistically more significant. However, this study keeps fertility and life expectancy in the system due to their theoretical soundness.

#### **IV.G. SUMMARY**

This chapter reports and analyzes the output of the six empirical models. Model 1 includes all control variables and shows that all estimated coefficients have their expected signs, except for education. One possible explanation is that the adopted measures of education are inappropriate, inaccurate, or unreliable. This concern was discussed in the previous chapter of this study. Model 2 adds the ratio of investment to GDP to the regression and finds that this variable is positively significant at p-value less than 0.1. This result would lead someone to rush and include investment as a permanent element in the final equation. However, model 3 shows that once trade openness is entered along with investment, the role of investment shrinks considerably (much more than openness) and becomes insignificant. Furthermore, growth determinants are regressed on investment as the new dependent variable and results show support for this causation rather than the reverse.

Accordingly, model 4 drops out investment and keeps openness as the first explanatory variable. Pertinent results show that openness has a significant positive impact on growth and more significant than in model 2 (when investment enters alone). Model 5 adds the second explanatory variable "regional integration" and finds

its estimated coefficient positive and statistically significant at  $p$ -value less than 0.05.

The final model 6 includes all three explanatory variables along with the other control variables. All three explanatory variables—trade openness, regional integration, and stability—are found positive and highly statistically significant. Since the role of stability, and in this context, is still new to growth literature, it is favorable to substantiate the results and address the concern of a counter-argument against the role of stability. One of the obvious and possible critiques is that stability could be the consequence of growth rather than the cause.

However, this study estimates such a reverse causality and found a one-way direction from stability to growth due to the existence of econometric specification errors when regressing the determinants of growth on stability. Another possible critique is the existence of instrumentality where stability might indirectly affect growth through other channels such as providing an environment conducive for growth through spurring openness, stimulating integration, attracting FDI, intensifying domestic and foreign competition, and/or reducing government spending.

However, much of the explanatory powers of these channels (variables) are accounted for in the suggested econometric of this study (model 6). Finally, no significant serial correlation has been detected and heteroskedastic error terms have been accounted for using White's (1981) procedure whenever existed.

## **V. SUMMARY, CONCLUSIONS, AND POLICY IMPLICATIONS**

This last chapter begins with a summary of the study including its significance, purpose, research questions, contribution, instrumentation, empirical findings and analysis. Then, it discusses the limitations of the study followed by linking the findings to relevant policy implications. The last section offers suggestions for further research.

The significance of this work lies in the recent ongoing zeal for identifying sources of long-term economic growth for countries. This research excitement has been revived over a decade ago through the emergence of the new endogenous growth theories. More recently, the development of growth economics took another momentum with the introduction of the new growth theories that attempted to combine features of the older neoclassical models with the newer endogenous ones; thus, preserving the convergence property in the former and benefiting from the non-convexity nature of the latter. One of the most urgent needs of today's governments, NGOs, and other international institutions is how to enhance standards of living and attain sustainable economic development. This problem became more within reach in this new global order, but the stakes also became even higher.

The purpose of this study is to identify the effects of openness, regionalism, and government policies on per capita growth rates across countries. Consequently, it attempts to answer questions such as: 1) Does trade liberalization improve growth, and can it replace the traditional role of investment as a stimulant for growth? 2) Does a higher degree of regional integration increase individual income? 3) To what extent do political, economic, and financial public policies in regards to stability affect steady-state growth?

In fact, the practical purpose of this research is an attempt to develop the new growth model in such a way to incorporate the recent globalization syndrome, the diversification of public policies in many governments and shifting roles in alliances, the ambiguous impact of the 'new economy', and the ongoing emergence of financial instruments, economic and demographic structures. Of

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course, this broad purpose would be narrowed down during the dissection procedures of this study.

The research question is how to increase the long-term economic growth per capita. This problem is divided into three sub-problems: 1) Does trade openness spur economic growth per capita? 2) Does regional integration enhance growth? 3) Does stability, as initiated by government political, economic, and financial policies, promote steady-state growth?

Subsequently, this study attempts to solve the above-mentioned three sub-problems by testing the following hypotheses:

- 1) As trade becomes more liberalized, growth rates per capita rise.
- 2) As regional integration increases, growth rate per capita increases.
- 3) As government provides a greater political, financial, and economic stability, economic growth increases.

Moreover, this work attempts to fill in some gaps in the recent growth literature. First, by exploring the increasing role of globalization and trade openness in growth models, and maybe to partially replace the traditional “overestimated” role of investment. Second, by investigating the depth of regional integration and its impact on steady-state growth within the new growth framework. And last but not least, by incorporating a parsimonious, yet broader role of government policies through synchronizing the pertinent political, financial, and economic factors in a single variable: stability.

The new growth model is extended and adopted to estimate the effects of the three explanatory variables—openness, RTA, and stability. The function employed is a double-log multivariate regression with per capita growth rate as the dependent variable. Due to the emphasis on the cross-sectional nature of this work and the minor differences in results with other advanced techniques (in this setting), OLS-SUR is hence used to estimate the coefficients in a panel setup of eighty observations sorted by country. This panel data provides richer information by combining cross-sectional, as well as

time-series data. The initial sample of three hundred and twenty observations comprises twenty countries from the four major trading blocs—NAFTA, MERCOSUR, ASEAN, and EU—covering sixteen years from 1982 to 1997.

The empirical long-term framework allows the model to estimate the effects of the initial determinants—those variables that take time (years) before they change significantly such as fertility rate, life expectancy, education, and initial individual income—on subsequent growth rates.

Consequently, this study breaks down the sixteen years into four equal periods by transforming all annual steady-state (long-term) variables (government expenditures, openness, integration, terms of trade, and stability) into periodic ones—expected values of every four consecutive years, while sorting the initial year (first year) of each period of some control variables, such as per capita GDP, fertility rate, education, and life expectancy. Therefore, the panel data is being transformed from three hundred and twenty observations into eighty (20 countries times 4 periods).

For argumentative reasons, this empirical work runs a “trial” model to assess the role of investment alone (model 2), and along with openness (model 3). In model 2, investment appears to be positive, however, when openness is introduced to the system things change. The openness variable sucks most of the explanatory power of investment, and both variables become positively insignificant. This weak link raises the possibility of a reverse causality between investment and growth.

To test such a reverse causality, the same independent variables of growth are regressed on investment—now, the dependent variable—and showed a plausible relationship in this direction; thus, supporting this study’s argument in excluding investment. Moreover, openness appears to have a positive significant impact on investment, maybe through the process of enhancing growth, which eventually creates more opportunities to attract investment.

The first hypothesis is tested in model 4 where only openness is added to the control variables. Findings meet this hypothesis by showing a significant ( $p < 0.01$ ) positive link between openness and

growth. Model 5 tests the integration hypothesis, and results also reveal a positive significant ( $p < 0.05$ ) relation with growth rates per capita, indicating that a greater degree of regional integration spurs growth. The last hypothesis is tested in model 6, and findings indicate a positively significant relationship between stability and growth.

To substantiate the latter result and because the lack of theoretical work on the causality between stability and growth, the determinants of growth are regressed on stability and show no reverse relationship due to some serious specification errors. Thus, the statistical significant impact of stability on growth seems very plausible and supports this study's last hypothesis. Another possible critique of the stability result might be raised in that stability could indirectly affect growth through other channels conducive for growth such as FDI, openness, integration, government spending. However, these same channels have been accounted for their instrumentality in this study.

Several limitations encounter this study. First of all, the use of OLS-SUR may put more emphasis on the sign rather than the measurement of coefficients. But, the employed technique seems more consistent with the cross-country nature of the study and the benefit of more information. Second, due to the underlying long-term framework of this study, a sample size covering sixteen years averaged in four periods could be statistically not sufficient for a representative sample. More importantly, the 'bold' 4-year period compared to the traditional 10-year period could fall short in reflecting a "long-term" horizon—even in nowadays' conceptual changes and volatilities.

Third, the proxy "risk" used to measure stability could be inadequate and thus creating some estimation errors. Finally, a further limitation might arise in the standardization of data since different sources and transformations are involved during the process of data collection—noting that logarithmic differences have been used to improve standardization among various sources.

The next section relates the openness, integration, and stability findings to some policy implications taking into account some pertinent criticism, and attempts to counter them.<sup>7</sup> Governments



should follow greater trade liberalization policies for the vast effect and net positive spillovers that such open regimes could have on various aspects of development. For instance, trade openness improves the opportunities to attract domestic, as well as foreign investments. Also, openness helps to absorb more knowledge and technology through importing foreign expertise and the process of re-inverse engineering. Exports too could advance local production to meet international standards. In this context, government should cut their tariffs and non-tariff barriers—such as quotas and voluntary export restraints—to reap the above-mentioned benefits as well as to provide consumers with a greater selection of goods and services at lower prices due to a fiercer competition that openness could create. Moreover, this intense competition could reallocate the use of resources in a more efficient manner.

Despite all these rewards of open trade policies, still an increasing number of skeptics are calling against it. They argue that openness is creating social injustice and resulting in more unemployment, wider income inequality, more child labor, greater environmental deterioration, and so on.

For those skeptic protectionists, it is argued that none of these critiques is founded on solid ground. In fact, it might be true that open trade policies increase unemployment, but this is only on the short-run and only for some few industries, which have no comparative advantage. In this case, a restructuring mechanism occurs and those who loose their jobs go to other competitive industries or 'with the government assistance' they create new jobs. This transitional period could be difficult for some more than others. Of course, those who are unemployed but have skills on demand can more easily find new jobs. For the remaining unemployed workers, the government role becomes very crucial in assisting and training them during this phase of structural change.

A lot of fanfare is being heard recently about the impact of trade openness on widening income inequalities. However, this argument falls short from empirical evidence, which mostly indicates no real significant causality between the two. Actually, studies showed that this income inequality gap is mostly due to technological change that increases demand for skilled labor across countries (Burtless,

Lawrence, Litan, and Shapiro, 1998). A more recent work (Dollar and Kraay, 2000) showed that trade openness benefits the poor to the same extent that it benefits the whole economy.

One of the mentioned attacks on openness is ‘child labor’. It is not argued in favor of it, not at all! However, in some countries the alternative offer, which is trade sanctions, as given by opponents of liberal trade, is even worse. The main reason of child labor is poverty and trade sanctions would lead to more poverty in these poor countries. For instance, some East Asian countries experienced child labor not out of wickedness but out of poverty or even in some cases out of starvation. When these countries started to advance economically—partly due to export-oriented policies—their governments acted positively in reducing child labor through increasing education subsidies and public schools, as well as assisting in the creation of more job opportunities.

Opponents of liberal trade also criticize openness in that it deteriorates the environment. Their arguments focus on past studies that have assumed environmental policy as exogenous. However, more recent empirics (Bommer and Schulze, 1999) showed that once environmental policy is recognized as politically endogenous, then greater openness can go hand in hand with an improved environment. Interestingly, it is also argued that awareness to environmental policies depends on the risk of increasing unemployment (Fredriksson and Gaston, 1999). It might be worth to mention here that to reduce energy emissions and greenhouse gases, tradable quotas or taxes could be a desirable mechanism that can escort any effort towards openness.

In this third millennium no one can afford not to catch the train of globalization and openness. Governments should engage in more trade openness in goods, as well as in services by cutting down all kinds of direct and indirect trade barriers, since it is noticed recently that there is an increasing trend in restricting openness through indirect ways such as filing antidumping suits to complain about “unfair trade” issues. In fact, antidumping actions—selling below average cost or even below marginal cost to access a market—hurt more consumers than they help local producers; thus, governments should only use them if they are conditioned on antitrust grounds. Moreover, governments should increase training and assistance

programs to workers displaced by trade openness and integration agreements in order to provide a smoother structural transition.

In regards to integration, governments should follow deeper degrees of 'open' regionalism whenever feasible. This might be true especially for small economies with no significant comparative or competitive advantages, and generally desirable for large economies in today's global arena and rising trading blocs. Advocates of regional integration relate its benefits to several reasons such as the efficient resource reallocation according to the comparative advantage concept, economies of scale achieved by specialization, reduction in transport costs, and net positive spillovers. These positive externalities could be reflected by knowledge, technology, culture, and reduction of tensions—e.g. Brazil and Argentina in 1995 after signing their customs union agreement. And maybe most importantly, is the fact that regional integration locks in openness reforms, so they can withstand the political oppositions of some interest groups, such as environmentalists and labor unions.

On the other hand, opponents indicate that RTA might create trade diversion, hurts nonmembers' standards of living, and most of all hinders efforts to a global integration where all nations are treated equally on the basis of most favored nation (MFN). Further critiques targeted the negative effects that RTA could have from migration, sovereignty and security, environmental spillovers (discussed earlier), and so on.

However, these critiques can be tackled systematically one by one. First, as discussed earlier in this study, RTAs do not necessarily create trade diversion. On the contrary, they can contribute in increasing the welfare of member countries and individuals. This is true in the case of open regionalism where external tariffs are kept low, especially for major industries (e.g. high-tech and capital goods for poor economies) that have better competitive advantages and exist outside the bloc; thus, country-members can still reap major efficiencies from the outside world. Second, regionalism does not really hurt non-members standards of living, but it increases their costs of staying out. Thus, giving another reason for non-members to join in.

Third, that famous statement accusing RTA as “stumbling blocs” for global integration is not realistic enough. In real life, there are an increasing number of trading blocs, as well as an increasing cooperation among them. For instance, the possible expansion plan, alliance, or maybe merger between NAFTA and MERCOSUR, in addition to some other arrangements between NAFTA / APEC, ASEAN / APEC, and so forth. For the sake of going along with the idea of “stumbling blocs”, it is assumed here a case where the ultimate goal of a global free trade area is achieved, and hence no trade barriers whatsoever exist worldwide. Thus, a worldwide restructuring through the reallocation of resources and the comparative advantage mechanisms occur.

However, those small economies with no significant comparative or competitive advantages (maybe) due to their small domestic markets, low incomes, economic and political structures, exploited natural resources (if they have any), and so on might not be able to integrate in that global system, and will not have any leverage to bargain with on the international scene, even not with their cheap (but unskilled) labor. These countries can practically exist in Africa, Latin America, or the Middle East (non-Oil exporters) where their long time authoritarian or military regimes do not allow room for much free-market reforms, at least not in the foreseeable future. Therefore, realistic actions could be taken to overcome political turbulences and sensitivities by engaging in economic regionalism, which could lock in reforms, create some kind of competitive industries, encourage equal cooperation with other regional blocs, and provide some leverage on the global arena.

Another reservation that opponents in developed countries have against RTA is legal and illegal migration from underdeveloped to developed countries and its negative impact on wages. In fact, studies (Burtless, Lawrence, Litan, and Shapiro, 1998; and Kposowa, 1998) showed that all kinds of migration have a positive impact on wages, except on the unskilled labors. But anyway those rich complainers mostly do not have a comparative advantage in unskilled sectors; thus, government in these developed countries ought better to assist, educate, and train their unskilled labor force for better skilled jobs. Alternatively, immigrants can also assist their

country of origin without even coming back through their expertise and brokerage roles, such as in India and China.

National sovereignty and security are another concern that might be threatened by deeper integration. However, unlike the EU, Asian blocs like ASEAN and APEC are 'statist' and are geared to sovereignty and security enhancement (Higgott, 1998).

In brief, governments should engage in regional integration to utilize or even create their comparative or competitive advantages. They should follow open regionalism by keeping external trade barriers down in such a way to benefit from major outside efficiencies, cooperate with other regional blocs, and design regional arrangements that would preserve national sovereignties and securities like in ASEAN.

Last but not least, governments should play a crucial role in providing political, financial, and economic stabilities. Although most studies used the rule of law to measure political stability, this study argues that there is more need to encompass all forms of stabilities ranging from economic, financial, and political in one standardized scale. The advantage of encompassing the three aspects of stabilities highlights the critical role of government in growth literature. Perhaps more importantly, the use of the composite risk variable (CRR) demonstrates the significant role of governments in paving the road for growth policies.

As a result, the best approach would be a partnership between the public and private sectors where the role of the former is more like a moderator rather than a regulator, acting as an agency that orchestrates growth policies compatible with social responsibilities.

Nowadays, there is an increasing political trend in opposing trade openness, globalization, or integration in the name of social justice. These manifestations and protests are being spread all over the world to become a recurrent slogan, if not a way to express dissatisfaction with *any* economic, environmental, social, or political problem, and blame it on openness and the new global order. What is really needed is the following:

- 1) Governments should continue liberalizing their trade in goods as well as in services, and not be discouraged by the short-term

unemployment outcomes of the early restructuring phase. Moreover, governments in partnership with the private sector, NGOs, MNCs, and international institutions should assure and assist displaced workers affected by liberalization, through increasing their compensatory and training programs to provide a smoother and faster transition in adjusting relevant markets. In fact, studies show that once unemployment is controlled, environmentalists' anti-openness activities start to cool down (Fredriksson and Gaston, 1999). Nevertheless, it might also be helpful to share some of the benefits of globalization with both *losers*—displaced workers as well as environmentalists.

- 2) It should be also explained to anti-free traders that, in terms of competitiveness, even with protectionist policies, foreign companies can still enter domestic markets through other means such as direct investments (e.g. Japanese auto makers in the U.S.)
- 3) Rich countries should ease trade barriers on agricultural and textile products (labor-intensive industries) imported from poorer countries before showing any serious gesture of debt relief and aid.
- 4) Governments, private sector, Bretton Woods institutions, MNCs, and NGOs should work in concert to educate the masses about the benefits of openness and globalization, regardless of the difficulties that might be encountered in the short-term like when losing or moving to other jobs.
- 5) These public and private institutions should allocate budgets to design, advertise, and promote educational awareness pertinent to the benefits of openness, in such a way to target simple issues to laymen rather than the current jargon methods. Thus, mobilizing the masses to support liberalization and integration efforts.
- 6) Developing economies, in particular small ones, might find it advisable to engage in *open* regional trading arrangements to be able to compete on the international arena, especially with the rising number and increasing fusion of other trading blocs.

- 7) Governments of industrialized countries ought not impose all their

Western views on poor economies—a symptom known as *Trojan Horse*. For instance, to help spurring growth in developing nations, developed countries should assist in promoting political, financial, and economic stabilities rather than pushing their poorer counterparts for “advanced” stages of democracy in a short period of time and interfering in their social and cultural issues. As a matter of fact, it might be even more plausible that economic growth stimulates democracy rather than the reverse.

- 8) Introduce some reforms to the World Bank, IMF, and WTO by increasing the participation and empowerment of developing countries. For instance, by recruiting more directors from developing nations or by simply increasing the voting power of the existing developing country-members. Because, for example, when it comes to voting power at the IMF, many developing countries, especially African ones are under-represented (5.58 percent) when compared to Europeans (40.88 percent) (The Economist, 2000). A more equitable redistribution of representation could provide a greater and more effective role to Bretton Woods institutions rather than limiting it.

Further research is suggested to examine this developed version of the new growth model by using a larger sample covering a greater number of blocs, country members and years (arranged in periods of ten years each), and to supplement the model under study with a simulation model that would allow for dynamic linkages among countries.

## BIBLIOGRAPHY

Ades, Alberto, and Hak B. Chua. 1997. "Thy Neighbor's Curse: Regional Instability and Economic Growth." *Journal of Economic Growth* 2: 279-304.

Aghion, Philippe, and Peter Howitt. 1992. "A Model of Growth Through Creative Destruction." *Econometrica* 60, 2 (March): 323-351.

Albelo, Carmen D. Alvarez. 1999. "Complementarity between Physical and Human Capital, and Speed of Convergence." *Economics Letters* 64, 3 (September): 357-361.

Alesina, Alberto, and Lawrence H. Summers. 1993. "Central Bank Independence and Macroeconomic Performance: Some Comparative Evidence." *Journal of Money, Credit, and Banking* 25 (May): 151-162.

Alesina, Alberto, and Roberto Perotti. 1996. "Income Distribution, Political Instability, and Investment." *European Economic Review* 40, 6 (June): 1203-1229.

Alesina, Alberto, and Dani Rodrik. 1994. "Distributive Politics and Economic Growth." *Quarterly Journal of Economics* 109, 2 (May): 465-491.

Arrow, Kenneth J. 1962. "The Economic Implications of Learning by Doing." *Review of Economic Studies* 29 (June): 155-173.

Backus, David K., and Mario J. Crucini. 2000. "Oil Prices and the Terms of Trade." *Journal of International Economics* 50, 1 (February): 185-213.

Bade, Robin, and J. Michael Parkin. 1982. "Central Bank Laws and Monetary Policy." Unpublished Paper, University of Western Ontario.

Baldwin, Richard E. 1997. "The Causes of Regionalism." *The World Economy* 20, 7 (November): 865-889.



Baldwin, Richard E., and Rikard Forslid. 1999. "Incremental Trade Policy and Endogenous Growth: A  $q$ -theory Approach." *Journal of Economic Dynamics & Control* 23, 5-6 (April): 797-799.

Baldwin, Richard E., and Rikard Forslid. 2000. "Trade Liberalization and Endogenous Growth: A  $q$ -theory Approach." *Journal of International Economics* 50, 2 (April): 497-517.

Banks, Arthur S. 1979. *Cross-National Time Series Data Archive*. Center for Social Analysis. State University of New York, Binghamton.

Barreto, Raul A. 2000. "Endogenous Corruption in a Neoclassical Growth Model." *European Economic Review* 44, 1 (January): 35-60.

Barro, Robert J. 1991. "Economic Growth in a Cross Section of Countries." *Quarterly Journal of Economics* 106, 2 (May): 407-433.

Barro, Robert J. 1997. *Determinants of Economic Growth: A Cross-Country Empirical Study*. Cambridge, MA: MIT Press.

Barro, Robert J., and Jong-Wha Lee. 1993. "International Comparisons of Educational Attainment." *Journal of Monetary Economics* 32 (December): 363-394.

Barro, Robert J., and Jong-Wha Lee. 1994. "Sources of Economic Growth." *Carnegie-Rochester Conference Series on Public Policy* (June): 1-46.

Barro, Robert J., and Jong-Wha Lee. 1996. "International Measures of Schooling Years and Schooling Quality." *American Economic Review* 86, 2 (May): 218-224.

Barro, Robert J., and Xavier Sala-i-Martin. 1995. *Economic Growth*. New York: McGraw-Hill.

Barro, Robert J., and Xavier Sala-i-Martin. 1997. "Technological Diffusion, Convergence, and Growth." *Journal of Economic Growth* 2, 1 (March): 1-27.

Barro, Robert J., N. Gregory Mankiw, and Xavier Sala-i-Martin. 1995. "Capital Mobility in Neoclassical Models of Growth." *American Economic Review* 85, 1 (March): 103-116.

Beanton, Albert E., Ina V. S. Mullis, Michael O. Martin, Eugenio J. Gonzales, Dana L. Kelly, and Teresa A. Smith. 1996. *Mathematics Achievement in the Middle School Years: IEA's Third International Mathematics and Science Study*. Boston, MA: Center for the Study of Testing, Evaluation, and Educational Policy, and Boston College.

Becker, Gary S., and Robert J. Barro. 1988. "A Reformulation of the Economic Theory of Fertility." *Quarterly Journal of Economics* 103, 1 (February): 1-25.

Becker, Gary S., Edward L. Glaeser, and Kevin M. Murphy. 1999. "Population and Economic Growth." *American Economic Review* 89, 2 (May): 145-150.

Behrman, Jere R. 1990. "Women's Schooling and Nonmarket Productivity: A Survey and a Reappraisal." Unpublished Paper, University of Pennsylvania.

Benhabib, Jess, and Mark M. Spiegel. 1993. "The Role of Human Capital and Political Instability in Economic Development." Unpublished Paper, New York University, March.

Bennell, Paul. 1997. "Foreign Direct Investment in Africa: Rhetoric and Reality." *SAIS Review* (Summer/Fall): 127-140.

Bhagwati, Jagdish, David Greenaway, and Arvind Panagariya. 1998. "Trading Preferentially: Theory and Policy." *Economic Journal* 108, 449 (July): 1128-1149.

Blomstrom, Magnus, Robert E. Lipsey, and Mario Zejan. 1993. "Is Fixed Investment the Key to Economic Growth?" NBER Working Paper no. 4436. National Bureau of Economic Research, Cambridge, MA.

Boileau, Martin. 1999. "Trade in Capital Goods and the Volatility of Net Exports and the Terms of Trade." *Journal of International Economics* 48, 2 (August): 347-365.

Bommer, Rolf. 1999. "Environmental Improvement with Trade Liberalization." *European Journal of Political Economy* 15, 4 (November): 639-661.

Borner, Silvio, Aymo Brunetti, and Beatrice Weder. 1994. *Political Credibility and Economic Development*. New York, NY: St. Martin's Press.

Brahmbhatt, Milan, and Uri Dadush. 1996. "Disparities in Global Integration." *Finance & Development* 33, 3 (September): 47-52.

Briault, Clive. 1995. "The Costs of Inflation." *Bank of England Quarterly Bulletin* 35 (February): 33-45.

Bruno, Michael, and William Easterly. 1996. "Inflation and Growth: In Search of a Stable Relationship." *Federal Reserve Bank of St. Louis Review* 78, 3 (May/June): 139-147.

Bryant, Ralph C. 1994. "Global Change: Increasing Economic Integration and Eroding Political Sovereignty." *The Brookings Review* 12, 4 (Fall): 42.

Burtless, Gary, Robert Z. Lawrence, Robert E. Litan, and Robert J. Shapiro. 1998. *Globophobia*. Washington, D.C.: The Brookings Institution Press.

Cabelle, Jordi, and Manuel S. Santos. 1993. "On Endogenous Growth with Physical and Human Capital." *Journal of Political Economy* 101, 6 (December): 1042-1067.

Caprio, Gerard C., and Daniela Klingebiel. 1999. "Table of Episodes of Major Bank Insolvencies." World Bank, Washington, D.C. Processed.

Caselli, Francesco, Gerardo Esquivel, and Fernando Lefort. 1996. "Reopening the Convergence Debate: A New Look at Cross-Country Growth Empirics." *Journal of Economic Growth* 1, 3 (September): 363-389.

Cass, David. 1965. "Optimum Growth in a Aggregative Model of Capital Accumulation." *Review of Economic Studies* 32 (July): 233-240.

Chua, Hak Bin. 1993. "On Spillovers and Convergence." Ph.D. dissertation, Harvard University.

Connoly, Michelle, and Jenessa Gunther. 1999. "Mercosur: Implications for Growth in Member Countries." *Current Issues in Economics and Finance* 5, 7 (May): 1-6.

Cukierman, Alex. 1992. *Central Bank Strategy, Credibility, and Independence*. Cambridge, MA: MIT Press.

De la Croix, David, and Omar Licandro. 1999. "Life Expectancy and Endogenous Growth." *Economics Letters* 65, 2 (November): 255-263.

Delong, J. Bradford, and Lawrence H. Summers. 1991. "Equipment Investment and Economic Growth." *Quarterly Journal of Economics* 106, 2 (May): 445-502.

Devereaux, Michael B., and Jean-Francois Wen. 1998. "Political Instability, Capital Taxation, and Growth." *European Economic Review* 42, 9 (November): 1635-1646.

Diao, Xinshen, Terry Roe, and Erine Yeldan. 1999. "Strategic Policies and Growth: An Applied Model of R&D-driven Endogenous Growth." *Journal of Development Economics* 60, 2 (December): 343-381.

Dollar, David, and Aart Kraay. 2000. "Growth Is Good for the Poor." Development Research Group. World Bank, Washington, D.C. (March): 1-43.

Domar, Evsey D. 1946. "Capital Expansion, Rate of Growth, and Employment." *Econometrica* 14 (April): 137-147.

Easterly, William. 1991. "Economic Policy and Economic Growth." *Finance & Development* 28, 3 (September): 10-14.

Easterly, William. 1993. "How Much Do Distortions Affect Growth?" *Journal of Monetary Economics* 32, 2 (November): 187-213.

Easterly, William. 1999. "Life during Growth." World Bank, Washington, DC: Processed.

Easterly, William, and Sergio Rebelo. 1993. "Fiscal Policy and Economic Growth: An Empirical Investigation." *Journal of Monetary Economics* 32 (December): 417-458.

Easterly, William, and Ross Levine. 1995. "Africa's Growth Tragedy: A Retrospective, 1960-89." World Bank, Policy Research Working Paper 1503.

Easterly, William, Ross Levine, and Lant Pritchett. Forthcoming. "Stylized Facts and the Growth Models Who Love Them." Development Research Group, World Bank, Washington, D.C.

*The Economist*. 2000. "Kohler's quest: The International Monetary Fund needs overhauling." July 29.

Edwards, Sebastian. 1993. "Openness, Trade Liberalization, and Growth in Developing Countries." *Journal of Economic Literature* 31, 3 (September): 1358-1394.

Edwards, Sebastian. 1997. "Trade Policy, Growth, and Income Distribution." *American Economic Review* 87, 2 (May): 205-211.

Edwards, Sebastian. 1998. "Openness, Productivity, and Growth: What Do We Really Know?" *Economic Journal* 108 (March): 383-398.

Erzan, Refik, and Alexander Yeats. 1991. "Tariff Valuation and Trade among Developing Countries: Do Developing Countries Discriminate Against Their Own Trade?" *Journal of Development Studies* 27, 4 (July): 64-84.

Farmer, Brian. 1999. *The Question of Dependency and Economic Development: A Quantitative Analysis*. Lanham, MD: University Press of America.

Feenstra, Robert C. 1996. "Trade and Uneven Growth." *Journal of Development Economics* 49, 1 (April): 229-257.

Feenstra, Robert C. 1998. "Integration of Trade and Disintegration of Production in the Global Economy." *Journal of Economic Perspectives* 12 (4): 31-50.

Fernandez-Arias, Eduardo, and Mark M. Spiegel. 1998. "North-South Customs Unions and International Capital Mobility." *Journal of International Economics* 46, 2 (December): 229-251.

Fougère, Maxime, and Marcel Mérette. 1999. "Population Ageing and Economic Growth in Seven OECD Countries." *Economic Modeling* 16, 3 (August): 411-427.

## On Openness, Integration and Economic Growth

Frankel, Jeffrey, and David Romer. 1999. "Does Trade Cause Growth?" *American Economic Review* 89 (3): 379-398.

Frankel, Jeffrey, Ernesto Stein, and Shang-Jin Wei. 1996. "Regional Trading Arrangements: Natural or Supernatural?" *American Economic Review* 86, 2 (May): 52-57.

Fredriksson, Per G., and Noel Gaston. 1999. "The "Greening" of Trade Unions and the Demand for Eco-Taxes." *European Journal of Political Economy* 15, 4 (November): 663-686.

Furusawa, Taiji. 1999. "The Negotiation of Sustainable Tariffs." *Journal of International Economics* 48, 2 (August): 321-345.

Galor, Oded. 1996. "Convergence? Inferences from Theoretical Models." *Economic Journal* 106, 437 (July): 1056-1070.

Galor, Oded, and David N. Weil. 1996. "The Gender Gap, Fertility, and Growth." *American Economic Review* 86, 3 (June): 374-388.

Gastil, Raymond D. 1987. *Freedom in the World*. Westport, CT. Greenwood Press.

Grilli, Vittorio, Donato Masciandaro, and Guido Tabellini. 1991. "Political and Monetary Institutions and Public Finance Policies in the Industrial Countries." *Economic Policy* 13 (October): 341-392.

Grinols, Earl L. 1993. "Increasing Returns and the Shift from Customs Union to Common Market." *Regional Science & Urban Economics* 23, 3 (July): 315-336.

Grossman, Gene M., and Alan B. Krueger. 1995. "Economic Growth and the Environment." *Quarterly Journal of Economics* 110: 353-377.

Grossman, Gene M., and Elhanan Helpman. 1991. *Innovation and Growth in the Global Economy*. Cambridge, MA: MIT Press.

Gutierrez, Mario A. 1996. "Is Small "Beautiful" for Economic Integration?" *Journal of World Trade* 30, 4 (August): 173-216.

Harrod, Roy F. 1939. "An Essay in Dynamic Theory." *Economic Journal* 49 (June): 14-33.

## On Openness, Integration and Economic Growth

Hassan, M. Kabir. 2000a. "Success and Failure of Various Groups of OIC Countries." Monograph. Islamic Economics Research Bureau, Dhaka, Bangladesh.

Hassan, M. Kabir. 2000b. "International Trade With SAARC and Trade Policies of Bangladesh." *Journal of Economic Cooperation* 21 (3): 99-152.

Hassan, M. Kabir. Forthcoming. "Is SAARC a Viable Economic Block?: Evidence from Gravity Model." *Journal of Asian Economics*.

Henrekson, Magnus, Johan Torstensson, and Rasha Torstensson. 1997. "Growth Effects of European Integration." *European Economic Review* 41, 8 (August): 1537-1558.

Higgott, Richard. 1998. "The International Political Economy of Regionalism: The Asia-Pacific and Europe Compared." In *Regionalism & Global Economic Integration: Europe, Asia and the Americas*. New York, NY: Routledge.

Huber, Evelyne, Dietrich Rueschemeyer, and John D. Stephens. 1993. "The Impact of Economic Development on Democracy." *Journal of Economic Perspectives* 7 (Summer): 71-85.

*International Country Risk Guide*. Various years. Composite Risk Ratings. East Syracuse, NY: The PRS Group.

International Monetary Fund (IMF). Various years. *International Financial Statistics Yearbook*. Washington, D.C.

International Monetary Fund (IMF). Various years. *Balance of Payments Statistics Yearbook*. Washington, D.C.

International Monetary Fund (IMF). 1998. *International Capital Markets*. Washington, D.C.

Iyigun, Murat F. 2000. "Timing of Childbearing and Economic Growth." *Journal of Development Economics* 61, 1 (February): 255-269.

Kenny, Charles. 1999. "Does Growth Cause Happiness, or Does Happiness Cause Growth?" *Kyklos* 52, 1 (Spring): 3-5.

Kenny, Charles, and David Williams. 1999. "What Do We Know about Economic Growth? Or Why Don't We Know Very Much?" Lady Margaret Hall, Oxford University. Processed.

Kerckhoff, Alan C., and Michelle Dylan. 2000. "Problems with International Measures of Education." *Journal of Socio-Economics* 28, 6 (June): 759-775.

Kim, Se-Jik, and Yong Jin Kim. 2000. "Growth Gains from Trade and Education." *Journal of International Economics* 50, 2 (April): 519-545.

King, Robert G., and Ross Levine. 1993. "Finance and Growth: Schumpeter Might be Right." *Quarterly Journal of Economics* 108, 3 (August): 717-738.

Kirkpatrick, Colin. 1994. "Regionalization, Regionalism and East Asian Economic Cooperation." *World Economy* 17, 2 (March): 191-203.

Knack, Stephen, and Philip Keefer. 1995. "Institutions and Economic Performance: Cross-Country Tests Using Alternative Institutions Measures." *Economics and Politics* 7: 207-227.

Knight, Frank H. 1944. "Diminishing Returns from Investment." *Journal of Political Economy* 52, (March): 26-47.

Kocherlakota, N. R. 1996. "Discussions of Inflation and Growth." In *Price Stability and Economic Growth*. Federal Reserve Bank of St. Louis: St. Louis.

Kolev, Dobrin R., and Thomas J. Prusa. 1999. "Tariff Policy for a Monopolist in a Signaling Game." *Journal of International Economics* 49, 1 (October): 51-76.

Konishi, Hideo, Kamal Saggi, and Shlomo Weber. 1999. "Endogenous Trade Policy Under Foreign Direct Investment." *Journal of International Economics* 49, 2 (December): 289-308.

Koopmans, Tjalling C. 1965. "On the Concept of Optimal Economic Growth." In *The Econometric Approach to Development Planning*. Amsterdam: North Holland.



Kosai, Yutaka, Jun Saito, and Naohiro Yashiro. 1998. "Declining Population and Sustained Economic Growth: Can They Coexist?" *American Economic Review* 88, 2 (May): 412-417.

Kposowa, Augustine J. 1998. *The Impact of Immigration on the United States Economy*. Lanham, MD: University Press of America.

Kre, Imir. 2000. "Strategic Trade Policy, Intellectual Property Rights Protection, and North-South Trade." *Journal of Development Economics* 61, 1 (February): 27-60.

Krueger, Anne O. 1983. *Trade and Employment in Developing Countries: Synthesis and Conclusions*. National Bureau of Economic Research, Cambridge, MA.

Krueger, Anne O. 1997. "Free Trade Agreements versus Customs Unions." *Journal of Development Economics* 54, 1 (October): 169-178.

Krueger, Anne O. 1998. "Why Trade Liberalization is Good for Growth." *Economic Journal* 108, 450 (September): 1513-1523.

Krugman, Paul. 1993. "On the Number and Location of Cities." *European Economic Review* 37: 293-328.

Krugman, Paul. 1995. "Growing World Trade: Causes and Consequences." *Brookings Papers on Economic Activity* 1: 327-377.

Krugman, Paul. 2000. "Technology, Trade and Factor Prices." *Journal of International Economics* 50, 1 (February): 51-71.

Krugman, Paul, and Anthony Venables. 1996. "Integration, Specialization, and Adjustment." *European Economic Review* 40, 3-5 (April): 959-968.

Kuznets, Simon. 1981. "Modern Economic Growth and the Less Developed Countries." *Conference on Experiences and Lessons of Economic Development in Taiwan*. Taipei, The Institute of Economics, Academia Sinica.

La Porta, Rafael, Florencia Lopez de Silanes, Andrei Shleifer, and Robert W. Vishny. 1998. "Agency Problems and Divided Policies Around the World." NBER Working Paper No. 6594. National Bureau of Economic Research, Cambridge, MA.

On Openness, Integration and Economic Growth

Lall, Sanjaya. 1998. "Putting Knowledge to Work for Development." Background Paper. World Bank. Washington, D.C.

Lee, Jong-Wha. 1993. "International Trade, Distortions, and Long-Run Economic Growth." *IMF Staff Papers*, 40 (June): 299-328.

Levine, Ross. 1996. "Stock Markets: A Spur to Economic Growth." *Finance & Development* 33, 1 (March): 7-11.

Levine, Ross. 1997. "Financial Development and Economic Growth: Views and Agenda." *Journal of Economic Literature* 35: 688-726.

Levine, Ross. 1998. "The Legal Environment, Banks, and Long-Run Economic Growth." *Journal of Money, Credit & Banking* 30, 3 (August): 596-614.

Levine, Ross, and Sara Zervos. 1993. "What We Have Learned About Policy and Growth from Cross-Country Regressions." *American Economic Review* 83, 2 (May): 426-431.

Levine, Ross, and Sara Zervos. 1998. "Stock Markets, Banks and Economic Growth." *American Economic Review* 88, 3 (June): 537-558.

Levine, Ross, Norman Loayza, and Thorsten Beck. 1998. "Financial Intermediation and Growth: Causality and Causes." Development Research Group. World Bank, Washington, D.C.

Lipset, Seymour Martin. 1959. "Some Social Requisites of Democracy: Economic Development and Political Legitimacy." *American Political Science Review* 53: 69-105.

Liu, Xiaming, Haiyan Song, and Peter Romilly. 1997. "An Empirical Investigation of the Causal Relationship between Openness and Economic Growth in China." *Applied Economics* 29, 12 (December): 1679-1686.

Logue, Dennis E., and Thomas D. Willett. 1976. "A Note on the Relationship Between the Rate and Variability of Inflation." *Economica* 43: 151-158.

Londregan, John B., and Keith T. Poole. 1990. "Poverty, the Coup Trap, and the Seizure of Executive Power." *World Politics* 42, 2 (January): 151-183.

Lucas, Robert E., Jr. 1988. "On the Mechanics of Economic Development." *Journal of Monetary Economics* 22, 1 (July): 3-42.

Lutz, Matthias, and H. W. Singer. 1994. "The Link between Increased Trade Openness and the Terms of Trade: An Empirical Investigation." *World Development* 22, 11 (November): 1697-1710.

Mallampally, Padma, and Karl P. Sauvant. 1999. "Foreign Direct Investment in Developing Countries." *Finance & Development* 36 (1): 34-37.

Makin, A. J. 1994. *International Capital Mobility and External Account Determination*. New York: St. Martin's Press.

Mankiw, N. Gregory. 1995. "The Growth of Nations." *Brookings Papers on Economic Activity* 1 (Spring): 275-327.

Mankiw, N. Gregory, David Romer, and David N. Weil. 1992. "A Contribution to the Empirics of Economic Growth." *Quarterly Journal of Economics* 107, 2 (May): 407-437.

Martin, Philippe. 1998. "Can Regional Policies Affect Growth and Geography in Europe?" *The World Economy* 21, 6 (August): 757-774.

Mehanna, Rock-Antoine. 1999. "NAFTA: A Comparative Analysis of the Economic Outcomes between US-Canada and US-Mexico." *Annual Meetings of the Economic Science Association and the Public Choice Society*, New Orleans, LA.

Mehanna, Rock-Antoine. Forthcoming. "Can the Role of Government in Growth Regressions be Broader, Yet More Parsimonious?." *Global Economy Quarterly*.

Mehanna, Rock-Antoine and Khashruzzaman Choudhury. 2000. "Fiscal Management in War and Reconstruction: The Case of Kosovo." *Annual Meetings of the Southwest Society of Economists*, San Antonio, TX.

Mehanna, Rock-Antoine and M. Kabir Hassan. 2002. "Is the Gulf Cooperation Council (GCC) A Successful Trading Bloc? A

Middle Eastern Framework." *Middle East Economic and Business Review* (July).

Michelacci, Claudio, and Paolo Zaffaroni. 2000. "Fractional Beta Convergence." *Journal of Monetary Economics* 45, 1 (February): 129-153.

Miranda, Jorge, Raul A. Torres, and Mario Ruiz. 1998. *The International Use of Anti-Dumping: 1987-1997*. Geneva: World Trade Organization.

Moreno, Ramon, and Bharat Trehan. 1997. "Location and the Growth of Nations." *Journal of Economic Growth* 2, 4 (December): 399-418.

Motley, Brian. 1998. "Growth and Inflation: A Cross-Country Study." *Federal Reserve Bank of San Francisco Economic Review* 1: 15-28.

Mulligan, Casey B., and Xavier Sala-i-Martin. 1993. "Transitional Dynamics in Two-Sector Models of Endogenous Growth." *Quarterly Journal of Economics* 108, 3 (August): 737-773.

Okun, Arthur M. 1971. "The Mirage of Steady Inflation." *Brookings Papers on Economic Activity* 2: 485-498.

Panagariya, Arvind. 1994. "East Asia and the New Regionalism in World Trade." *World Economy* 17, 6 (November): 817-840.

Panagariya, Arvind. 1996. "The Free Trade Area of the Americas: Good for Latin America?" *World Economy* 19, 5 (September): 485-516.

Panagariya, Arvind. 1998. "Do Transport Costs Justify Regional Preferential Trading Arrangements? No." *Weltwirtschaftliches Archiv* 134, 2 (Spring): 280-302.

Panagariya, Arvind. 1999. "The Regionalism Debate: An Overview." *World Economy* 22 (4): 477-512.

Panagariya, Arvind, and T. N. Srinivasan. 1997. *The New Regionalism: A Benign or Malign Growth?*. Department of Economics, University of Maryland, College Park: Processed.

Park, Jee-Hyeong. 2000. "International Trade Agreements between Countries of Asymmetric Size." *Journal of International Economics* 50, 2 (April): 473-495.

Porter, Michael E. 1990. *The Competitive Advantage of Nations*. New York, NY: The Free Press.

Preeg, Ernest H. 1998. *From Here to Free Trade: Essays in Post-Uruguay Round Trade Strategy*. Chicago, IL: The University of Chicago Press.

Pritchett, Lant. 1996. "Forget Convergence: Divergence, Past, Present, and Future." *Finance & Development* 33, 2 (June): 40-44.

Przeworski, Ada, and Fernando Limongi. 1993. "Political Regimes and Economic Growth." *Journal of Economic Perspectives* 7 (Summer): 51-69.

Putnam, Robert D., Robert Leonardi, and Raffaella Y. Nanetti. 1993. *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton, N.J.: Princeton University Press.

Quah, Danny T. 1993. "Galton's Fallacy and Tests of the Convergence Hypothesis." *Scandinavian Journal of Economics* 95, 4 (December): 421-438.

Quah, Danny T. 1996. "Empirics for Economic Growth and Convergence." *European Economic Review* 40, 6 (June): 1353-1376.

Quigley, John M. 1998. "Urban Diversity and Economic Growth." *Journal of Economic Perspectives* 12: 127-138.

Ramsey, Frank. 1928. "A Mathematical Theory of Saving." *Economic Journal* 38 (December): 543-559.

Rebelo, Sergio. 1991. "Long-Run Policy Analysis and Long-Run Growth." *Journal of Political Economy* 99, 3 (June): 500-521.

Ricardo, David. 1817. *On the Principles of Political Economy and Taxation*. (Ed.) P. Sraffa. Cambridge: Cambridge University Press, 1951 ed.

Ricci, Luca Antonio. 1999. "Economic Geography and Comparative Advantage: Agglomeration versus Specialization." *European Economic Review* 43, 2 (February): 357-377.

## On Openness, Integration and Economic Growth

Rivera-Batiz, Luis A., and Paul M. Romer. 1991. "Economic Integration and Endogenous Growth." *Quarterly Journal of Economics* 106, 2 (May): 531-556.

Rodrik, Dani. 1997. *Has Globalization Gone Too Far?* Washington, DC: Institute for International Economics.

Rodrik, Dani. 1998. "Globalization, Social Conflict and Economic Growth." *World Economy* 21, 2 (March): 143-159.

Romer, Paul M. 1986. "Increasing Returns and Long-Run Growth." *Journal of Political Economy* 94, 5 (October): 1002-1037.

Romer, Paul M. 1987. "Growth Based on Increasing Returns Due to Specialization." *American Economic Review* 77, 2 (May): 56-62.

Romer, Paul M. 1990. "Endogenous Technological Change." *Journal of Political Economy* 98, 5 (October): part II, S71-S102.

Sachs, Jeffrey D., and Howard J. Shatz. 1996. "U.S. Trade with Developing Countries and Wage Inequality." *American Economic Review* 86, 2 (May): 234.

Sachs, Jeffrey D., and Andrew Warner. 1997. "Fundamental Sources of Long-run Growth." *American Economic Review* 87 (2): 184-188.

Sala-i-Martin, Xavier X. 1996. "Regional Cohesion: Evidence and Theories of Regional Growth and Convergence." *European Economic Review* 40, 6 (June): 1325-1353.

Schultz, T. Paul. 1989. "Returns Women's Education." PHRWD background paper 89/001. Washington, D.C.: World Bank, Population, Health, and Nutrition Department.

Schumpeter, Joseph A. 1934. *The Theory of Economic Development*. Cambridge, MA: Harvard University Press.

Sen, Amartya Kumar. 1999. *Development as Freedom*. New York, NY: Knopf.

Sheshinski, Eytan. 1967. "Optimal Accumulation with Learning by Doing." In Karl Shell, ed., *Essays on the Theory of Optimal Economic Growth*, 31-52. Cambridge, MA: MIT Press.

Smith, Adam. 1776. *An Inquiry into the Nature and Causes of the Wealth of Nations*. New York: Prometheus Books, 1991.

Solow, Robert. 1956. "A Contribution to the Theory of Economic growth." *Quarterly Journal of Economics* 70, 1 (February): 65-94.

Srinivasan, T. N. 1998. *Developing Countries and the Multilateral Trading System*. Boulder, Colo.: Westview Press.

Stiglitz, Joseph F. 1999. "Trade and the Developing World: A New Agenda." *Current History*. In *Annual Editions: World Politics 2000/01*. Guilford, CT: McGraw-Hill.

Summers, Robert, and Alan Heston. 1991. "The Penn World Table (Mark 5): An Expanded Set of International Comparisons, 1950-1988." *Quarterly Journal of Economics* 106, 2 (May): 327-368.

Swan, Trevor W. 1956. "Economic Growth and Capital Accumulation." *Economic Record* 32 (November): 334-361.

Swanson, Peggy E., and Ajay Kapoor. 1996. "Trading Blocs: Bane or Blessings?." *Multinational Business Review* 4, 2 (Fall): 50-58.

Temple, Jonathan. 1999. "A Positive Effect of Human Capital on Growth." *Economic Letters* 65, 1 (October): 131-134.

Torstensson, Rasha M. 1999. "Growth, Knowledge Transfer and European Integration." *Applied Economics* 31, 1 (January): 97-128.

UNCTAD (United Nations Conference on Trade and Development). 1998. *World Investment Report 1998*. New York and Geneva.

Urwin, Derek W. 1995. *The Community of Europe : A History of European Integration Since 1945*. New York, NY: Longman.

Vanhoundt, Patrick. 1999. "Did the European Unification Induce Economic Growth? In Search of Scale Effects and Persistent Changes." *Weltwirtschaftliches Archiv* 135, 12 (Spring): 193-225.

## On Openness, Integration and Economic Growth

Walz, Uwe. 1997. "Growth and Deeper Regional Integration in a 3-Country Model." *Review of International Economics* 5, 4 (November): 492-507.

Walz, Uwe. 1998. "Does an Enlargement of a Common Market Stimulate Growth and Convergence." *Journal of International Economics* 45, 2 (August): 297-321.

Wei, Shang-Jin, and Jeffrey Frankel. 1996. "Can Regional Blocs Be Stepping Stones to Global Free Trade?" *Review of International Economics and Finance* 5 (4).

Wei, Shang-Jin, and Jeffrey Frankel. 1998. "Open Regionalism in a World of Continental Trade Blocs." *IMF Staff Papers* 45, 3 (September): 440-454.

White, H. 1981. "Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity." *Econometrica* 48: 817-838.

Williams III, Roberton C. 1999. "Revisiting the Cost of Protectionism: the Role of Tax Distortions in the Labor Market." *Journal of International Economics* 47, 2 (April): 429-447.

World Bank. Various years. *World Development Indicators*. Washington, DC.

World Bank. 1999. *World Development Report 1998/99: Knowledge for Development*. New York: Oxford University Press.

World Bank. 2000. *World Development Report 1999/2000: Entering the 21<sup>st</sup> Century*. New York: Oxford University Press.

WTO (World Trade Organization). Various years. *Annual Report*. Geneva.

Young, Allyn. 1928. "Increasing Returns and Economic Progress." *Economic Journal*, 38 (December): 527-542.



## **LIST OF ACRONYMS**

<b>APEC</b>	<b>Asia-Pacific Economic Cooperation</b>
<b>ASEAN</b>	<b>Association of South East Asian Nations</b>
<b>CIF</b>	<b>Cost, Insurance, and Freight</b>
<b>CM</b>	<b>Common Market</b>
<b>CPI</b>	<b>Consumer Price Index</b>
<b>CRR</b>	<b>Composite Risk Rating</b>
<b>CU</b>	<b>Customs Union</b>
<b>EC</b>	<b>European Community</b>
<b>EEC</b>	<b>European Economic Community (see EU)</b>
<b>EFTA</b>	<b>European Free Trade Association</b>
<b>EU</b>	<b>European Union</b>
<b>FDI</b>	<b>Foreign Direct Investment</b>
<b>FOB</b>	<b>Free On Board</b>
<b>FTA</b>	<b>Free Trade Area</b>
<b>GATT</b>	<b>General Agreement on Tariffs and Trade</b>
<b>GCC</b>	<b>Gulf Cooperation Council</b>
<b>GDP</b>	<b>Gross Domestic Product</b>
<b>GLS</b>	<b>Generalized Least Squares</b>
<b>GNP</b>	<b>Gross National Product</b>
<b>ICRG</b>	<b>International Country Risk Guide</b>
<b>IMF</b>	<b>International Monetary Fund</b>
<b>IPR</b>	<b>Intellectual Property Rights</b>
<b>ISI</b>	<b>Import-Substituting Industrialization</b>

## On Openness, Integration and Economic Growth

LDC	Less Developed Countries
LSDV	Least Squares Dummy Variable
MERCOSUR	Mercado Común del Sur (Common Market of the South)
MFN	Most Favored Nation
MNC	Multinational Corporations
NAFTA	North American Free Trade Agreement
NATO	North Atlantic Treaty Organization
NGO	Nongovernmental Organization
OECD	Organization for Economic Co-operation and Development
OIC	Organization of the Islamic Conference
OLS	Ordinary Least Squares
OPEC	Organization of the Petroleum Exporting Countries
PTA	Preferential Trade Arrangements
R&D	Research and Development
RR	Rolling Regressions
RTA	Regional Trading Arrangements
SAARC	South Asian Association for Regional Cooperation
SUR	Seemingly Unrelated
TFP	Total Factor Productivity
UNCTAD	United Nations Conference on Trade and Development
UN	United Nations
VER	Voluntary Export Restraint
WLS	Weighted Least Squares
WTO	World Trade Organization

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Dr. Hassan has great experience in the privatizing process of public sector industries. He has great experience in training through workshops, seminars, and formal classes. Dr. Hassan worked on impact of globalization of financial markets on developing countries, privatization of commercial banks in developing countries, impact of trade liberalization on the efficiency of industry, efficiency and performance analysis of commercial banks, financial sector reform in developing countries, euro impact of the MENA countries, and regional economic integration either as consultant of the USAID, the World Bank, IDB, ICDT, Government of Bangladesh, USIA and the Nathan Associates. Dr. Hassan visited International Monetary Fund (IMF) as a Visiting Scholar, and written on capital market, interest rate and monetary policies in developing countries.

Dr. Hassan earned a B.A. in Mathematics and Economics from Gustavus Adolphus College (a four-year liberal arts college) in 1985 from Minnesota, a M.A. in Economics in 1987 from University of Nebraska-Lincoln, and a Ph.D. in Finance in 1990 from University of Nebraska-Lincoln. Dr. Hassan has been teaching at the University of New Orleans since 1990, where he is now Professor of Finance, and LREC Chair Professor of Economic Development and Finance, and Associate Chair of Department of Economics and Finance.

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Dr. Hassan has received many awards and recognition for his outstanding teaching and research performances. Dr. Hassan has received the Outstanding Executive Teaching Award twice at the University of New Orleans. Dr. Hassan has supervised thirteen students for Ph.D. degrees. He has served as outside examiner for doctoral theses of students from India, Sweden and Bangladesh. He has received a number of research grants to conduct research in international banking and finance areas.

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Dr. Mehanna has published several articles in refereed academic journals and has presented a large number of research papers in professional conferences. He has also presided over several sessions at professional seminars and served as a reviewer.

Dr. Mehanna has worked on the role of government in economic development, impact of trade liberalization on developing countries, privatization in developing countries, business and economic sectors reforms in developing countries, socioeconomic factors and development, regional economic integration, analysis of fiscal decentralization and government spending, and economic impact of defense spending. Dr. Mehanna is frequently cited and interviewed for his expert opinion by such media outlets as the National Public Radio's "Evening Update" program, regional U.S. newspapers, and various regional TV stations where he was exclusively featured recently on the 60-minute show "Here & There."

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Dr. Mehanna's dissertation has been nominated by the Graduate Council of Southern University for the *National Distinguished Dissertation Award*. He has received numerous academic awards such as doctoral student with the best overall grade point average, doctoral student of the year, the National Dean's list, Beta Gamma Sigma Honorary Business Society, Golden Key National Honor Society, Financial Management Association International Honor Society, and so forth.

Dr. Mehanna serves as economic adviser to several cultural and philanthropic organizations. He is the founder president of the Alumni Association of the Notre Dame University (NDU) in Lebanon and the co-founder of the NDU placement office. Dr. Mehanna gives consulting advice to several non-governmental organizations and community agencies.

## BIIT Publications

1. *A Young Muslim's Guide to Religions in the World (1992) by Dr. Syed, Sajjad Husain*
2. *Islam in Bengali Verse (1992) by Poet Farrukh Ahmad, Translated into English by Dr. Syed Sajjad Husain*
3. *Directory of Specialists (1993) edited by M. Zohurul Islam FCA and Dr. A.K.M. Ahsanullah*
4. *Civilization and Society 1<sup>st</sup> Print (1994) 2<sup>nd</sup> Print (2002) by Dr. Syed Sajjad Husain*
5. *Social Laws of Islam (1995) by Shah Abdul Hannan*
6. *ইসলামী উসুলে ফিকাহ (১৯৯৬) মূলঃ ডঃ তাহা জাবির আল আলওয়ানী অনুবাদঃ মুহাঃ নুরল আমীন জাওহার*
7. *Leadership: Western and Islamic (1996) by Dr. M. Anisuzzaman and Prof. Md. Zainul Abedin Majumder*
8. *Guidelines to Islamic Economics: Nature, Concepts and Principles (1996) by Prof. M. Raihan Sharif*
9. *ইসলামের দৃষ্টিতে নারী (১৯৯৬) মূলঃ বি, আইশা লিমু ও ফাতিমা হীরেম, অনুবাদঃ ডঃ মোহাম্মদ আনিসুজ্জামান*
10. *মুসলিম নারী-পুরুষের পোশাক (১৯৯৭) মূলঃ ডঃ জামাল আল বাদাবী, অনুবাদঃ মোঃ শামীম আহসান*
11. *Islamization of Academic Disciplines (seminar proceedings) 1997 Edited by M. Zohurul Islam FCA*
12. *কোরআন ও সুন্নাহঃ স্থান-কাল-প্রেক্ষিত (১৯৯৭) মূলঃ ডঃ তাহা জাবির আল-আলওয়ানী ও ডঃ ইমাদ আল দীন খলিল, অনুবাদঃ শেখ এনামুল হক*
13. *Origin and Development of Experimental Science (1997) by Dr. Muin-ud Din Ahmad Khan*
14. *রাসূলের (সঃ) যুগে মদীনার সমাজ (১৯৯৮) মূলঃ আকরাম জিয়া আল উমারী, অনুবাদঃ মুহাম্মদ সাজ্জাদুল ইসলাম*
15. *ইসলামে নৈতিকতা ও আচরণ (১৯৯৮) মূলঃ মারওয়ান ইবরাহিম আল-কাইজি, অনুবাদঃ শেখ এনামুল হক*
16. *Man and Universe (1998) by Maj. Md. Zakaria Kamal*
17. *আত-তাওহীদঃ চিন্তাক্ষেত্রে ও জীবনে এর অর্থ ও তাৎপর্য (১৯৯৮) মূলঃ ডঃ ইসমাঈল রাজী আল-ফারুকী, অনুবাদঃ অধ্যাপক শাহেদ আলী*

18. *Al-Zaka : A Hand Book of Zakah Administration (1999) by M. Zohurul Islam FCA*
19. *The Islamic Theory of Jihad and The International System (1999) by Md. Moniruzzaman*
20. *ইসলাম ও অর্থনৈতিক চ্যালেঞ্জ (২০০০) মূল : ডঃ এম, উমার চাপরা, অনুবাদঃ ডঃ মিয়া মুহাম্মদ আইয়ুব*
21. *ইসলাম ও অর্থনৈতিক উন্নয়ন (২০০০) মূল : ডঃ এম, উমার চাপরা, অনুবাদঃ ডঃ মাহমুদ আহমদ*
22. *ইসলামের দৃষ্টিতে রাজনৈতিক সংঘাত ও সহিংসতা নিয়ন্ত্রণ, মূলঃ ডঃ আব্দুল হামিদ আহমাদ আবুসুলায়মান, অনুবাদঃ মাওঃ আকরাম ফারুক*
23. *Accounting: Philosophy, Ethics and Principles - An Islamic Perspective by M. Zohurul Islam FCA*
24. *আমাদের সংস্কৃতি : বিচার্য বিষয় ও চ্যালেঞ্জসমূহ (সেমিনার প্রবন্ধ বক্তব্য সংকলন) ২০০১ সম্পাদনা : অধ্যাপক জয়নুল আবেদীন মজুমদার*
25. *Shah Wali Allah's Concept of Ijtihad and Taqlid (2002) by Prof. Md. Athar Ali*
26. *রাসূলের (সঃ) যুগে নারী স্বাধীনতা (২য় বর্ড) মূলঃ আবদুল হালীম আবু শুক্কাহ, অনুবাদ : মাওলানা মুহাম্মদ মুজাম্মেল হক সম্পাদনা : আবদুল মান্নান তালিব*
27. *ইসলাম ও আন্তর্জাতিক সম্পর্ক, মূলঃ ডঃ আবদুল হামিদ আহমাদ আবুসুলাইমান, অনুবাদ : অধ্যাপক জয়নুল আবেদীন মজুমদার*
28. *On Openness, Integration and Economic Growth by Dr. M. Kabir Hassan*
29. *ইসলাম ও নয়া আন্তর্জাতিক অর্থ ব্যবস্থা : সামাজিক প্রেক্ষাপট (প্রবন্ধ সংকলন) অনুবাদ : এম, রুহুল আমিন*

#### প্রকাশকের অপেক্ষায়

1. *রাসূলের (সঃ) যুগে নারী স্বাধীনতা (৪র্থ বর্ড), মূলঃ আবদুল হালীম আবু শুক্কাহ, অনুবাদ : অধ্যাপক আবুল কালাম পাটওয়ারী, সম্পাদনাঃ আবদুল মান্নান তালিব*
2. *A Dynamic Analysis of Trade and Development in Islamic Countries : Selected Case Studies by Dr. Masudul Alam Chowdhury*
3. *Globalization and the Muslim World by Dr. M. Kabir Hassan*
4. *সংকট ও ক্রান্তিলগ্নে মুসলিম মানস মূল : ডঃ আব্দুল হামিদ আহমদ আবু সুলাইমান*



