ENDOGENOUS GROWTH THEORY AND THE TRINIDAD AND TOBAGO ECONOMY

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Introduction

Sustained industrial growth has been widely acknowledged as an engine of economic transformation in all countries: developed and developing. Less developed countries, however, remained predominantly agrarian due to lack of dynamism in the industrial economy and the low level of industrialization.

The Endogenous Growth Theory has useful insights that can help the local economy to become more efficient, and participate more meaningfully in the global economy. Basically we need to move into areas that have more technology added to the production units (higher value added products) and we have to be able to make them at internationally competitive rates. The new growth theorists tell us that the levels of innovation, research and development and learning-by-doing are the crucial factors here.

Within this framework, a firm’s rate of innovation is influenced by the technological (and industrial) environment facing the firm that is by:

* Opportunity conditions: the firm’s likelihood to innovate, given the investment in research;

* Appropriability conditions: the possibility of protecting innovations, and the profits thereby derived, from imitation;

* Degree of cumulativeness: the extent to which the amount of innovations produced in previous periods raise the probability of innovating in the present period;

* Knowledge base: the type of knowledge upon which the firm’s activities are based.

The firms in the local economy may find this new approach prohibitive in relation to their present Human Resources (HR) protocols, the cost of investing in Research and Development (R&D), and the overall culture of competitiveness as they are accustomed to existing in a historical ‘safe-zone’ in the Caribbean. This history, as many are learning, is not sufficient to maintain profits, or even continue existing in an increasingly globalized and liberalized world.

It is being proposed that the government has a role to play in assisting these local firms in moving from their positions of inefficiency and over dependence on government handouts, to engage the economy, region and possibly the globe, to becoming firms that are able to trade competitively due to investments in R&D and innovation. This can be done on two levels: the governmental policies as related to innovation...
and technology, R&D, Science and Technology (S&T), International Property Rights (IPRs), educational, health, competition and industrial policies; and the development of firm specific competencies.

There are various concepts of endogenous growth, and it is apparent that the neo-classical theories conflict with new growth theories in regard to the degree of convergence that will take place between the rich and poor countries (Romer 1994). It is clear that for small developing countries like Trinidad and Tobago, that no real convergence occurred between the more developed countries of the North, and small developing countries of the South. Research & Development is the key to the explanation of different per-capita incomes globally, and interestingly, both theories offer explanations for success of the East Asia NICs.

The new Endogenous Growth Theorists believe that improvements in productivity can be linked to a faster pace of innovation and extra investment in human capital within the economy. This is not a new position, as since 1956, Solow (1957) recognized that technological change has been regarded as one of the main sources of economic growth. These endogenous growth theorists stress the need for governments and private sector institutions to implement programs and policies that seek to nurture innovation, and provide incentives for individuals to be inventive and entrepreneurial. Thus, there is a central role for knowledge as a determinant of economic growth and these theorists see this knowledge coming from within the economy as opposed to the old theories that assumed that this knowledge came from external sources.

Endogenous growth theorists predict positive externalities and spillover effects from development of a high value-added knowledge economy which is able to develop and sustain a competitive advantage in growth industries in the global economy.

The main points of the Endogenous Growth Theory are:

a. The rate of technological progress should not be taken as a given in a growth model, appropriate government policies can permanently raise a country's growth rate particularly if they lead to a higher level of competition in markets and a higher rate of innovation; which may in turn lead to the development of market niches for some products.

b. There are potentially increasing returns from higher levels of capital investment.

c. Endogenous Theory emphasizes that private investment in Research & Development is the central source of technological progress.

d. Protection of property rights and patents can provide incentives to engage in Research & Development.

e. Investment in human capital (education and training) is an essential ingredient of growth.

f. Trade openness is more beneficial in the long run to small economies than is trade protectionism.

By the late 1970s there were many aggregate models assuming that there are many firms in the market and that they all had monopoly power together. New Growth Theorists, Gene Grossman and Elhanan Helpman (1989) took over the reigns and moved the theoretical
argument further by including monopolistic competition into their models. This new model showed that it was indeed monopoly profits that fueled research and development and by extension, new discoveries.

Research done by Grossman and Helpman (1989, 1990) has shown that monopoly profits motivate innovation, and has gone further to demonstrate the connections between market size, international trade and growth. The New Growth theory relaxes the assumption of diminishing returns to capital. It does so with the new assumption of continuous Research & Development. With constant or increasing returns, the New Growth theory does not conclude that income per capita will converge across the world economies.

After an expansive review of the literature, Grossman and Helpman’s (1994) theory of endogenous growth seems to be the most applicable, and for this reason, will be used as the cornerstone of this paper looking at the possibility of development for Trinidad and Tobago in the non-oil sectors.

This endogenous growth literature provides us with new insights into the causes and effects of technological change as a determinant of economic growth. Basically there are two identifiable types of technological change: an increase in the number of technologies on the one hand (Romer 1990; Grossman and Helpman 1991) and the quality improvement of the existing technologies (Aghion and Howitt 1998; Grossman and Helpman 1991) on the other.

Endogenous growth theory simply means economic growth that occurs from within the system, usually identified as the nation state. It is clear to see that there have been a number of reasons for the growth of these theories/models and they include the fact that the economies and outputs from the industrialized world have increased exponentially over the last 100 years. This new theory “...tries instead to uncover the private and public sector choices that cause the rate of growth of the residual to vary across countries” (Romer 1994).

New Growth Theory incorporates two fundamental points. Firstly, it views technological progress as a product of economic activity, whereas previous theories treated technology as a given, or a product of market forces. It internalizes technology into a model that explains how markets function. Secondly, New Growth Theory holds that unlike physical objects, knowledge is characterized by increasing returns and these increasing returns are responsible for driving the process of growth. The main drivers of economic growth therefore are knowledge and innovation (Romer 1990; Grossman and Helpman 1991). This is held as a truism for both developed and developing countries alike.

To these theorists, knowledge drives growth because ideas can be shared indefinitely and can continuously add to the production function and increase the standard of living of all. These knowledge outputs and ideas are then, not subject to the economists’ concept of diminishing returns. In fact, it suggests quite the opposite result. The new growth theorists believe that technological innovation is the force that keeps the economy growing, and not as some believe, the new technologies themselves (suggesting that the process is more important to some extent than the actual product of those processes). This creates some space within the theory for small developing states to increase their share of world trade, while at the same time increasing their levels of productivity and efficiency; ultimately increasing the welfare of their entire economies.
The neo-classical assumption of very competitive markets (non-existent monopolies) was challenged by Romer (1994) and it laid the foundation for the development of the New Growth Theory. Romer tries to show that the economy cannot grow by simply adding to the stock of its physical capital, but that the economy can grow indefinitely if it can increase its stock of human capital in the form of knowledge and ideas; thus he makes a clear distinction between physical capital (manpower) on the one hand, and human capital (intellectual activity) on the other.

What is significant with this new endogenous growth theory is that it offers hope for the developing countries that seem to be gaining no advantages from the old neo-classical theories of trade that assumed through comparative advantage that all countries will benefit from increasing welfare. There are now alternative ways for these economies to develop other than depending solely on trade, as has been promoted by the neo-classical theorists. Traditional theories of growth focused on trade as the engine of growth while the new endogenous growth theory concentrates on education, on-the-job-training and the development of new technologies for the world market. This approach gives a much larger level of maneuverability for the small developing economy, as it suggests that certain endogenous practices and policies might in the long run, assist in developing the economy and increase the welfare gains for its members.

It also assumes that the processes, if executed properly will increase the levels of productivity and efficiency indefinitely thus again allowing the economy to continue growing even when external factors (such as price taking, volatility of prices for the raw materials exported, increase of substitutes for primary goods) have seemingly traditionally worked against them.

**International Trade**

It will first be assumed that trade is good for developing countries not only because it opens the door for increased inflows of goods that would not have been otherwise available, but also because it will allow for increased knowledge and technology into the domestic economy. Thus, trade and increased knowledge (tacit or in the form of advanced technology) is a positive externality of trade to the developing countries. As Lall (2001) states: “(t)he importance of understanding the nature, implications and determinants of developing world export patterns cannot be overstated. In a liberalizing world, export access is more important than ever to economic performance.”

Along with the increase in trade and the increase in technology, developing countries like Trinidad and Tobago have always tried to attract FDI through MNC-friendly industrial and governmental policies, which usually took the form of direct investments or mergers and acquisitions. Yet it is clear that some countries have been more successful in attracting the ‘right’ type of MNC and in their ability to capitalize on the imported and advanced technologies and processes, while others have been woefully inadequate in their attempt to do so. In fact, patterns of comparative advantage between developing countries vary according to national policies for technological learning and technological import, even if they have similar ‘endowments’ of labor, capital and skills. As highlighted by the new growth theorists, education is a vital factor when considering how effectively the local workforce can adapt to and imitate the new technologies that are injected into the local economy.
To reiterate, there needs to be a synergy between the policies of the government and the intention of the MNCs that are attracted by the domestic governments of the developing countries. It is widely accepted that when MNCs invest, there is sometimes a need to upgrade the skills sets of its employees if it intends to enhance its profitability and what is important to note is that such upgrading often needs government support.

The assumption is that the firms that are more efficient and competitive are actually the ones that have more contact with the outside world in terms of trading partners, knowledge flows and spillovers achieved from this trade. Historically, small economies like Trinidad and Tobago are characterized by monopolies as well as relatively limited international trading partners; however there is a clear alteration of that phenomenon recently where there are recorded increases in trade as well as trading partners (in terms of countries as well as firms). This increase activity between the local and foreign firms should lead ceteris paribus (as the theory suggests) to more knowledge spillover and technological acquisitions. “Technology cannot simply be transferred to a developing country like a physical product: its effective implantation has to include important elements of capability building: simply providing equipment and operating instructions, patents, designs or blueprints does not ensure that the technology will be effectively utilized” (Lall 2001).

An important characteristic of the role of foreign trade in the technological catch-up of developing countries is the complementary nature of technological change and human capital formation. The level of education has a crucial impact on the growth of total factor productivity because it determines the capacity of an economy to (i) carry out technological innovation (Romer 1990), and (ii) most importantly for developing countries, adopt and efficiently implement technology from abroad (Mayer 2001).

The cost of technology transfer may be relatively low in Trinidad and Tobago as the locals have already mastered the relevant skills as a result of long-term investments in education by successive governments since independence in the 1960s. Additionally, there already exists in the economy firms that can utilize the technology, where the necessary inputs (water, raw material and energy) already exist.

“There is some evidence that a country’s absorptive capacity vis-a-vis imported technology relates positively to per capita gross national product, manufacturing as a percent of gross domestic productivity; and the absolute number of scientists and engineers in the country” (Robinson 1988). Again, it is being assumed that Trinidad and Tobago has the requisite amount of human capital to facilitate the efficient transfer of technology from the more developed countries with which it trades.

**Benefits of Globalization**

What is of interest is the benefits that developing countries like Trinidad and Tobago can reap from globalization and that usually requires them to ignite a simultaneous increase of technology diffusion and the skill level of the domestic labour force. One of the most efficient ways of ensuring this is for there to be heavy government intervention by way of policy designed to sustain incentives for both human capital formation and a reduction in the cost of technology adoption. This technological capability is necessary for there to be any real sustainable development. Marcelle defines this technological capability as “the collection of
skills, knowledge, aptitudes and attitudes which confer the ability to operate, to understand, to change and to create production processes” (Marcelle 2004). And for the purposes of this paper, this argument will hold firm for not only the government, but the private sector and their policies that will influence the rate of innovation and productivity growth in the short, medium and long run in the economy.

This is more important for small developing countries like Trinidad and Tobago as the firms need to increase their innovative capacities if they are to increase productivity and move away from the production of low-end goods; that are subject to price fluctuation and relatively easy substitutability.

For firms to realize the benefits of investment in R&D and innovation there needs to be the development of proper Intellectual Property Rights policies to ensure the profits derived from such activities will be properly appropriated. It is amply clear that international R&D spillovers will not contribute to productivity gains until developing country firms invest in R&D; this is because these firms must invest in R&D to acquire the technical capability to use the knowledge available to enhance their productivity.

Comparative Advantage, Globalization and the Trinidad and Tobago Economy

The old theories suggested that for international trade to be welfare driven, that all countries should produce the goods for which they have abundant resources, in other words, where they had a comparative advantage. The problem with the theory of comparative advantage is that in the age of globalization and liberalization, capital is mobile and can move easily from country to country in search of the highest returns on investment (Khor 2001). This presents a serious problem to the neo-classical model as now the production in one country may be owned by another country and all profits may be expatriated from the host economy to the investing country. Therefore there are little if any, benefits or welfare to be accrued by the producing/host county. In fact this is exactly what has occurred in the international arena since the time of colonization, so as a rule, trade has not been of great assistance to the development of underdeveloped or developing economies in the international arena.

The advantage that the new endogenous growth model has over the old neo-classical model is to show how countries can work within the process of globalization to find complementary activities (like education and training) and create regulatory frameworks which help them survive and collect rents from the multinational firms within their political and economic boundaries.

Basically, the world market would dictate that there are inefficiencies in the local economy and that there needs to be constant upgrading if the economy is to maintain its position in the international economy in terms of trade flows and in the long run, market expansion and increased profits. This may be possible in the Trinidad and Tobago scenario as there are areas of the economy that may be open to skills development and increased Research & Development and ultimately increase competitiveness in the international market place. Reduced protectionism as is promoted under import substitution policies is shunned in this approach, the logic being that the international competition should increase the levels of efficiency in the local industries or at least so it is hoped. Let us note that for free trade to really work internationally, we are assuming
that the marketplace is perfectly competitive and that the countries of the North are not influencing the international patterns of trade in any way (either through subsidies, dumping, unfair trading practice, etc.). In other words, we in the developing countries need to realize that although perfect competition is the assumption that we understand and theorize about, in reality it hardly exists.

As a consequence, the new growth theorists postulate that in the initial stage, the developing countries may not only want, but may in fact need the governments to offer some level of protection for their exports. In fact, there seems to be little evidence that the governmental interference at this stage leads to the decline in economic growth, additionally, more government does not necessarily mean less market. In other words the issue should not necessarily be the amount of government intervention that is allowed, but the quality and nature of those interventions and how they relate to or promote growth and development, increased efficiency and innovations.

Free Trade Policy and Economic Growth

History has shown that the industrialization process of many (if not all) of the developed countries has been advanced by the protectionist policies of France, Germany, United States, and Japan. Developing countries have used these examples to justify their internal policies of infant industry protectionism since 1945. As a consequence of the subsequent failure of these models there was a rise of the export-orientation models in these countries.

Competitiveness

The term competitiveness can be used in a very general sense to mean the advantage one has over one’s competitors in the domestic or international marketplace. However there is some disagreement with the use of this term by the World Economic Forum (WEF) and the International Institute of Management and Development (IMD). The WEF sees competitiveness as the country’s ability to achieve sustained high rates of growth in GDP per capita; while the IMD sees it as the ability to provide the right environment (economic) that can sustain an industry’s competitiveness.

As it is the firm in the economy that produces, we need to take a quick look at the firm. According to Porter (1985), one of the leading theorists on the firm’s competitiveness, there are four interdependent, mutually reinforcing attributes of a nation that would determine to what extent it has a competitive environment. Firstly the Factor conditions, like the availability of a skilled workforce and infrastructure; secondly, Demand conditions for goods and services of the industry; thirdly, related and supporting industries (inclusive of competitive suppliers) and finally, Firm strategy, structure and rivalry. He believes that both individually and as a system, these factors work in tandem to create the competitive environment; the most important being the pressure that these factors exert on firms to invest and innovate.

It is believed that due to the prevalence of national or domestic distortions, that there lies a case for industry protection. So if an infant industry has problems ‘getting off the ground’ efficiently due to inabilities of raising capital or credit, the argument is to get the government involved and provide the much needed capital or subsidize the credit and NOT necessarily increase protection of the industry (Bardhan 1993). What this does however, is confuse the issue as the policymakers now try to be interventionist in their approach locally
(domestic policy), while at the same time being a free-trader in the international arena. This is not necessarily the best combination that is needed, particularly in developing countries.

Trade Liberalization and Comparative Advantage and Innovation Policies

The industrial policies of Trinidad and Tobago like many developing countries need to take innovative competition into account, if only for the simple reason that innovative competition is emerging in an increasing number of sectors, including for example, textiles and garments (which are vital to the survival of their economies).

CARICOM is characterized by the over-dependence on agriculture in some of its economies. To add to the malady, the prices of these goods on the international market are consistently falling, substitutes are being developed almost daily and the yield from the land is gradually falling. It is definitely time to look towards possible alternatives for economic development in the region.

Trade liberalization may offer some sort of refuge for these agricultural economies ravaged by falling demand and prices and the associated economic hardships. There may be a relative growth in the agricultural sector as trade opportunities are opened up and it becomes more efficient. In effect, the opening up of trade encourages trade and thus the associated resource allocation to follow comparative advantage. That however, is only possible if these economies are able to increase the levels of efficiency and innovation in the primary sector, and this has just not been the case historically, as evidenced by the closing of Caroni Ltd. in Trinidad, and the failing of the banana industry of the Organization of Eastern Caribbean States.

In simple terms, a country’s comparative advantage (so the old theory goes) depends on its resource endowments, the more land and labour it has relative to capital, the more likely it is to have a comparative advantage in agricultural products. However, as cautioned in this paper, this does not limit the production possibilities (and product diversification) of these economies. There is the possibility of increasing the capital endowment in the CARICOM region through a host of avenues including the local increase in industrial capital and regionally policy-directed Foreign Direct Investment.

Knowledge and its use is the opening that is available to small developing countries that do not have much hope of developing using their limited natural resources. This warrants the development of education policies that are targeted to the development of skills that will be needed in the future to enable the population to benefit from the use of existing technologies and the development of new ones. These institutions must by necessity engender the transfer of knowledge and ensure that this knowledge is used in the most efficient way possible for the welfare of the economy.

Imperfections of information do exist (impeding the workings of the international markets) and this must be taken into account when developing strategies for developing knowledge capabilities and capacities. It is important to note that the traditional economic models assumed that perfect information may not provide a good approximation for understanding the factors of production, namely land, labor, product, and capital markets.

These theories in essence fail to explain essential parts of the institutional structure and performance of the economies, and these shortcomings are specifically important in small
developing countries like CARICOM, which suffer from an even greater lack of information. In attempting to improve the functioning of our markets, CARICOM needs effective development strategies that must take into account these limitations.

Our development attempts in the region have been open to scrutiny, but we must now go further to understand the present realities and see how they may be used to assist in realizing our developmental goals. In essence we need to not only look at the new knowledge, but also the new processes of knowledge gathering and knowledge application.

In essence change is a necessary ingredient for sustainable economic development to be achieved in the region. We need to turn to endogenous growth theories, recent global trends, new business practices and international convention, as a start in this process. This will lay the foundation for the development of truly local and regional developmental plans which will necessarily have as components to them industrial, health, education, intellectual property, competition, S&T, R&D and trade policies.

CARIFORUM

The Cotonou Partnership Agreement seeks to increase trade between the African, Caribbean and Pacific Countries (ACP) and the European Union (EU). Signed in 2000 and ratified in the Dominican Republic (DR) in 2002, Cotonou has five basic pillars: political dialogue, economic and trade cooperation, financial cooperation, a participatory approach and poverty reduction. It is important to note that in its basic and irreducible spirit, poverty reduction is the single most important element of the Economic Partnership Agreements (EPAs).

Whereas it has been suggested that the region moved too slowly into the EPA, or as some commentators are quick to note, we have been bullied into signing the agreement, or as some purport, this agreement is the best thing that could have happened to the region (especially for the LDCs) in the light of the imminent removal of trade preferences to the European Union. In any event, the existence of the EPA which has partnered CARICOM with the Dominican Republic (possibly for reasons as significant as geographic convenience) is a reality and the region has to find ways of utilizing this new agreement.

One of the problems with the EPA as it now stands is that it does not give free access of our businesses and services (architecture, cultural, professional, etc) to the EU and where there are some areas of access they seem to be blocked by excessive, cumbersome, unintelligible and bureaucratic hurdles. As the agreement is underway, it is now difficult to insert these CARICOM-based considerations into the text. Nevertheless, the EPA does have implications for the development of the region.

Conclusion

As indicated in this paper, there are a number of issues that affect the levels of present and future development of the Trinidad and Tobago economy as well as the CARICOM region as a whole. What is being advocated here is that we have to move away from the myopic views that have stagnated the economies of the region. We need to look at the new world and see what there is on the horizon that we can use; then devise policies and programs to get there and utilize what is needed. We used as the starting point the endogenous growth theory as it lays the intellectual and empirical foundation for the arguments forwarded in this paper. We
also recognize that there are some limitations to
this theory's application to the region, but they
are outweighed by its positive contributions.

The private sector, banking sector, government sector, and educational sector all have a part to play. We are advocating that knowledge and knowledge creation is the way forward, and there are prescribed paths to take to move the economy to one that is knowledge driven, and knowledge focused. This will involve an understanding of the interrelation that all these have to each other and to the ultimate national goals. This will involve understanding and funding the support industries and efforts of S&T, R&D, competition policy, innovation policy, IPRs and the like.

The road is long, but the task is not impossible. Focused governmental policies in the above areas as well as trade and industrial policies will allow the development of the knowledge sector and increased knowledge use in the economy. This knowledge development will lead ultimately to increased efficiency and productivity which will lead to increased R&D and innovation, which will lead to an increase in exports and foreign exchange earnings which will lead to increased welfare benefits for the population. And that is the basis of all economic policies and theories, figuring out how to increase the welfare of the population.
References


