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THE ROLE AND SIGNIFICANCE OF HIGHER EDUCATION IN THE SUSTAINABLE DEVELOPMENT OF THE CARIBBEAN

1. INTRODUCTION

1.1 I have been asked to address the topic of the role and significance of higher education in the sustainable development of the Caribbean. Sustainable development means different things to different people. Some conceive of it in environmental terms with particular regard to conservation and preservation of the environment for current and future generations. Others see it in terms of a country's ability to provide decent, healthy, affordable livelihoods for its people over time.

1.2 For present purposes, I choose to work with a definition rooted in economics, though by no means denying the salience of the environmental quality perspective for the work of higher education institutions. Certainly, academic curricula and training programmes which develop human understanding of ecological and environmental issues and concerns, which develop human capacity to make sound decisions and to effectively regulate and manage treatment of the environment must make meaningful contributions to the quality of life now and into the future.

1.3 One can go further and recognise the influence of environmental factors on economic performance. Tourism, a major Caribbean industry, owes its success in no small measure to the quality of the physical environment. Erosion of beaches, degradation of mangrove swamps, pollution of rivers, and global warming resulting in increased frequency and magnitude of natural hazard occurrences can reduce the attractiveness and earning potential of many of the Caribbean islands. Likewise, bio-diversity loss for plant and animal species can counter attempts to develop ecotourism and safari-type tourism products in other countries such as Dominica and Guyana.

1.4 The focus on an economic-based definition of sustainable development in this presentation is therefore one mandated by time constraints.

2. SUSTAINABLE ECONOMIC DEVELOPMENT

2.1 Sustainable economic development may be defined as an upward trajectory or path of economic growth and socio-economic development which is resilient to external shocks. Incorporation of “socio-economic development” in the definition is intended as a reminder that the link between economic growth and improvements in quality of life summarised by the term “socio economic development” although usually positive is by no means unique in the mathematical sense that economic growth does not necessary lead to socio-economic development.

2.2 The notion of an upward trajectory has two factors. Firstly, it encompasses the time displacement, i.e. upward shift, in the economic growth performance of Caribbean countries**. Table 1** shows that average annual economic growth rates for these countries have tended to be in the vicinity of 2% to 4% over the past decade. Sustainable economic growth requires economic growth rates of the order of 6% to 8%. Secondly, the notion of upward trajectory speaks to the persistence of economic growth. The third and fourth columns of **Table 1** show that for many countries the standard deviation of GDP growth rates are between 3% and 6% of annual average growth rates. Volatility is what presently characterises the economic growth record of Caribbean countries. Sustainable economic development requires stable economic growth.

TABLE 1: Economic Growth in Some Caribbean Countries

	Average Annual Growth Rates of per capita GDP (Percentage)	**Standard Deviation of Growth Rates (Percentage)**
Country	**1980s**	**1990s1980s1990s**
Antigua & Barbuda	6.66	1.963.493.20
Bahamas	1.61	0.015.802.62
Belize	2.81	1.936.142.99
Barbados	1.82	0.504.403.68
Dominica	6.29	1.954.601.31
Dominican Republic	1.52	3.032.864.37
Grenada	4.72	2.533.542.58
Guyana	-3.32	3.794.923.99
Haiti	-1.49	2.472.955.56
Jamaica	0.19	-0.124.302.01

St. Kitts & Nevis	6.89	4.324.962.04
St. Lucia	4.28	3.1410.496.54
Suriname	-1.73	2.718.645.23
Trinidad & Tobago	-0.73	2.305.865.23
St. Vincent & the Grenadines	4.80	2.423.473.20

Source: Taken from Tables 1.2 and 2.1 in “Macroeconomic Volatility, Household Vulnerability and Institutional Policy Responses”, Report No. 24165-LAC, World Bank, June 2002.

2.3 The external shocks, i.e. factors which may drive Caribbean economies off their warranted growth paths or their historical growth paths may be placed in three categories: economic, political and physical. Among the economic the more significant are adverse changes in foreign trade regimes, collapse of markets and large negative changes in financial flows. There have been adverse changes in the trade regime for bananas by the World Trade Organisation panel ruling which effectively eliminated European preferences for Caribbean banana producers. The price-support margin for Caribbean sugar exports to Europe has been similarly adversely affected by another World Trade Organisation ruling. In short order, the future of two major agricultural export industries has been imperilled. The collapse of markets due to the emergence of new products, abrupt shifts in consumer preferences, and the emergence of new competitive rivals is always a risk in open competitive systems. Globalisation has added to these risks for small Caribbean economies which lack the attitudes of large-scale operations and reciprocal ease of access into the markets of the large, industrial nations. Countries often seek to sustain their economic growth in the face of trade contractions (expected to be temporary) by sourcing external loans and grants. Substantially diminished access to foreign financial capital because of considerations such as impaired credit worthiness (eg. Barbados, Belize, Grenada, Jamaica in 2004) could result in significant retardation of economic growth.

2.4 Political shocks to Caribbean economic systems include domestic conflicts and riots witnessed sporadically in Guyana since 1962 and in Venezuela intensively since 2000. They also include insurrections such as those in Grenada in 1979 and 1983, Suriname in the 1980s, and Trinidad and Tobago in 1970 and 1990. Political shocks of these kinds damage investor confidence, disrupt production and trade, and divert resources from production and investment into security and safety and the exercise of “military” power. Some political shocks are of international nature. A foreign country or group of countries may impose trade sanctions in pursuit of political objectives, e.g. US trade embargoes on Cuba, or may cease financial assistance for similar reasons eg. suspension of

US security assistance for some Caribbean countries because of their refusal to side with the US on an International Criminal Court of Justice issue.

2.5 The predominant physical shocks are natural hazard occurrences such as hurricanes and tropical storms, earthquakes, volcanoes and floods which destroy production and residential capital stock and human lives with regrettable frequency, disrupt production, cause employment and income losses and weaken public finances. Natural hazard vulnerability may seem such an endemic part of Caribbean countries that no further elaboration is required here, save to say that although natural hazards are to a large extent intrinsic, natural hazard vulnerability is not and that natural hazard vulnerability can be minimised and managed.

2.6 The resilience of Caribbean countries to external shocks is contingent upon the adaptability and flexibility of their industries, their enterprises, and their public and private decision systems. Rolling with the trade punches, switching products, adopting new and improved negotiating and trading stances, sourcing new markets and establishing new market niches, reacting quickly, anticipating major changes in the international environment and adjusting early to them, and building sensibly with natural hazard occurrences in mind are but a few expressions of adaptability and flexibility that come to mind.

2.7 They all depend upon human resource quality. Human resource quality is the key to resilience in Caribbean countries. In large economies, flexibility and adaptability derive mainly from the emergence of new enterprises rather than from changes in product lines or production technology in existing enterprises. Small Caribbean economies in which new enterprise development is weak would find it easier to switch in terms of markets than in terms of products and production technology. The limited malleability of plant and equipment is a further reason why the stress has to be placed on human capital in the search for economic resilience.

3. EDUCATION AND ECONOMIC DEVELOPMENT

3.1 Frederick Harbison and Charles Meyers (1965) wrote the following lyrical phrase:

"*Education is both the seed and the flower of economic development*"

This sentence captures both education's role as a contributor to economic development and its significance as a benefit of economic development.

Somewhat earlier, W. Arthur Lewis (1955) and Theodore Schultz (1961) in what might be termed intuitive theories of economic growth argued convincingly that education through enhancing the quality of human resources and strengthening institutions contributes significantly to long-term economic growth. More recent endogenous growth theorists such as Paul Romer (1986), Robert Lucas (1988) and Robert Barro (1991) addressed the economic growth contributions of

education through the elaboration and quantification of formal economic growth models, with Romer in particular stressing the role of knowledge and new technology adoption in the economic growth process.

3.2 Most of the education and economic growth literature examines the role of education through all levels of education, typically employing some summary measure of education such as number of years of schooling. However, in this presentation the focus is on the role of higher education specifically. A cue can be taken from W. Arthur Lewis who in 1974 writing on the subject of “The University in Less Developed Countries” identified four roles as aspects of university involvement in the process of economic development, namely:

(a) Bearer of Culture
(b) Trainer of Skills
(c) Frontier of Knowledge
(d) Service Agency

4. **TRAINER OF SKILLS**

4.1 Education usually improves the quality of labour. This is the traditional nexus between education and economic growth and development which applies no less to higher education than to primary, secondary or post-secondary education. Higher education provides the range and quantity of trained and expert resources required for economic development.

4.2 In the conventional language of macroeconomics, university education is seen as an investment in human capital where human capital can be defined as:

> *"the knowledge, skills, competencies and other attributes embodied in individuals that are relevant to economic activity.” (OECD 1998)"*

4.3 Investments in human capital by Caribbean countries can be presumed to generate sizeable rates of social return. In the case of Trinidad and Tobago, Bourne and Dass (2003) for the period 1986-1999 estimated social rates of return between 6% and 9% for agriculture graduates, between 9% and 13% for Natural Science graduates, between 12% and 14% for Engineering graduates, between 7% and 13% for Humanities, and between 10% and 15% for Social Sciences.

4.4 Despite the conclusive nature of these and similar micro-studies, there has been doubt created about the role of education by the results of some empirical aggregate models (Benhabib and Spiegel 1994, Barro and Sala-i-Martin 1995, Pritchett 1997) which show negative associations between education and economic growth. The glaring inconsistency between the negative results of those aggregate models and the positive association implied by the substantial social rates of return reported universally by studies employing different data sets for different countries across the globe have prompted methodological re-

examination of the aggregate studies. Krueger and Lindahl (2001) in a very detailed and careful study demonstrate that correction for errors in measuring schooling and in measuring GDP and controlling for the effect of physical capital in cross-country regressions resolve the inconsistency between the micro and macro results, specifically, the macro results then confirm the positive association between education and economic growth show by rates of return studies.

4.5 The substantial social rates of return to higher education observed in the Caribbean may fall unless higher education remains relevant in the sense of providing the body of knowledge and skills which can serve as the basis for innovation and competitiveness and enables the visions and strategies essential for continuing success in a globalised world.

4.6 It sometimes seems that debates in higher education circles deal more with issues such as expansion of access and the lowering of entrance requirements to facilitate expanded access and their consequences for the quality of university graduate output. The tradeoff between scale and quality is not a new one in the higher education sector. Universities throughout the world have fought to maintain quality in the face of enrolment growth by changing methods of instructional delivery and by improvements in educational technology, eg. computer-assisted learning and the like. The challenges posed by lower entrance standards have also been managed by more deliberate determination of desired outputs and the creation of an institutional structure to supply the desired range of products.

4.7 One of the roles of higher education planners is to focus on identifying more clearly the variegated requirements of the market place for higher education products and on determining the correspondingly appropriate supply configuration of the higher education sector. From this perspective, leadership in education policy and planning is one of the major contributions that higher education can make to sustainable development.

5. THE PRODUCTIVITY OF NON-GRADUATES

5.1 Some rates of return studies for the Caribbean have shown social rates of return to university education which are lower than those from investment in primary and secondary education respectively.

5.2 Sometimes, the findings are not so much that social rates of return to university education are lower than those for primary and secondary education but that the gap between social rates of return and private rates of return is larger for university education than for primary and secondary education.

5.3 Two policy inferences have been typically drawn from these kinds of empirical findings. One is that there should be a greater element of user cost-

recovery through tuition fees in higher education. Correspondingly, public subsidy of university education should be proportionately lower. This is not an unreasonable inference if satisfactory arrangements exist for bridging loans to finance tuition and other private costs or if there are workable schemes for deferred payment of accrued tuition charges, as in Australia for instance.

5.4 The other inference incorrectly drawn is that public investment in education should be skewed towards primary and secondary education. The error lies in not taking into account the interdependence of the productivities of graduates and non-graduates. University graduates raise the productivity of non-graduates. This is an important positive externality – on indirect contribution to economic development. No less important, however, is the effect of having a sufficiently well-trained and educated cadre of non-university graduates on the productivity of university graduates. Factors of production complement each other in the production process, limitations or constraints on one impinging on the contributions of the others. Human resources as a differentiated or non-homogeneous input has within it the elements of complementary and constraint found between human resources and other inputs in the production relation.

5.5 Instead of seeking to skew public investment on the basis of disparities in social rates of return by levels of education, educational policy makers and planners should be focussed on striking the appropriate balance in the rates of expansion in the primary, secondary, post-secondary and tertiary sub-sectors of the higher education sector. Caribbean countries have not achieved the correct balance. The post-secondary sub-sector is weak almost everywhere.

5.6 Wide quality differences exist in the secondary sub-sector as evidenced by variations in student pass rates of the formal school leaving examinations such as those administered by the Caribbean Examinations Council and the Cambridge Examinations Board. The co-existence of a few elite secondary schools with very high student pass rates and many run-of-the-mill schools with low student pass rates not only compounds problems of inequality to access to good quality secondary education but also deprives the higher education sub-sector itself of an adequate supply of properly prepared new entrants.

6. KNOWLEDGE CREATION, DIFUSION AND TECHNOLOGY TRANSFER

6.1 Knowledge and innovation are sources of economic growth. They confer advantages of technological progress, organisational improvement, new product development, production adaptability and flexibility. Universities and specialised research centres are the prime sources of new knowledge and education. However, much of that work takes place in a few major industrial countries.

6.2 Caribbean university research is inadequately funded. Research and development expenditures comprise small proportions of university budgets reflecting the higher priority governments as the principal source of university

finance assigned to undergraduate teaching services and the lower priority assigned to postgraduate teaching and research. Much of the research which gets done is financed by charitable foundations and international agencies or is done as add-ons to basic teaching functions. Caribbean universities are not exceptional in the national under-funding of their research activities. Statistics on the ratio of research and development expenditures to Gross National Product reveal that the countries on a whole allocate very little funds to research and development.

6.3 The Caribbean higher education sector has not made its principal contribution as frontier of knowledge through technological advances in production or marketing on the basis of original research. Instead, the main lines of its contributions are the following. One, science and technology dissemination and transfer. The universities are active in sourcing scientific and technological knowledge from institutions and scholars at the frontier in major industrial countries and in disseminating and transferring that knowledge through classroom encounters principally. This role has tremendous value because it ensures a cadre of persons sufficiently knowledgeable in science and technology to ensure that the countries' production systems do not lag far behind their international competitors and comparators. However, the universities' role in technology transfer should extend beyond classroom and laboratory instruction. It should encompass direct links between the universities and the economic systems, as for example in structured research and development programmes which address specific science and technology requirements of production enterprises or industries. This aspect of technology transfer mechanisms is recognised to have been tremendously important to the economic progress of Japan, Taiwan and South Korea. In the Caribbean, higher education institutions have weak functional connections with the economic systems outside of the supply of graduates. Therefore, there is much scope for the higher education institutions to establish stronger and more widespread linkages between their science and technology faculties and production enterprises, industries and economic sectors.

6.4 The observation that science and technology transfer has dominated the work of the universities as frontiers of knowledge institutions does not mean that there has been no original science and technology research in the Caribbean. One can readily point to examples such as the isolation of chemical compounds from natural products and innovations in plant and animal species. However, there does appear to be a disconnect between much of that work and its utilisation for the benefit of Caribbean society.

6.5 In 1993, the University of the West Indies (UWI) established a Research and Development Fund with a multilateral institution grant contribution of USD 10 million of which USD 1 million was reserved for "pure" research and the remainder allocated to research projects with prospects of commercial development. The UWI experience provides some explanations of the difficulties

confronting higher education institutions in creating science and technology knowledge for sustainable development. **First**, total resources available are extremely limited. **Second**, allocations from the limited pool are driven as much by populism as by scientific merit and commercial potential. These two factors combine to cause inadequate funding for any major project with prospects of income reflows. **Third,** strong traditions of research individualism and micro-rivalries frustrate the emergence of critical mass, weakens time persistence of research effort, and prevents credible institutional commitments to funding agencies, all of which are necessary for attraction of substantial financial resources and successful project implementation of high quality research programmes. **Fourth,** there is a cultural disdain among Caribbean scholars for income generation which when combined with ignorance of business decision-making systems and business practices has several consequences: frequent failure to win financial support from the corporate sector; reluctance to transit from the research stage to the development stage of research and development projects; and negotiation of contracts with enterprises that turn out to be commercially unrewarding for both the researchers and the academic institutions.

6.6 In "their frontier of knowledge" function, higher education institutions contribute to improvements in the quality of Caribbean life and national identity through research in medical sciences, the social sciences, humanities and education as a discipline itself. More recent examples in medical sciences include the work on HIV/AIDS, community medicine, diabetes and other chronic diseases, glaucoma, and cardiovascular surgery. In the social sciences major contributions have been made to understanding of Caribbean social structure, public governance and political behaviour, macroeconomic policy and the working of various economic sectors and industries. The humanities, including the performing arts, have been instrumental in clarifying and developing Caribbean identities through historical research charting the passage of Caribbean peoples from earliest times to the present and through documenting and analysing expressions of their creative sensibilities. Research in education above all has spawned pedagogies more closely attuned to the cultural and linguistic diversity of the Caribbean.

6.7 W. Arthur Lewis (1974) in commenting on the research situation of universities in less developed countries (LDCs) 30 years ago noted that:

> "*Many of our LDC universities, clinging to the research ideal and its corollaries, get the worse of both worlds; they have to pay salaries competitive with Oxford and Cambridge, and to limit teaching hours, without getting much creativity for the money*""

6.8 Lewis sees this situation as a "*British trap"* in which UWI and others have been caught and warns that "*our Governments are beginning to see through the pretense that we are advancing the frontiers of knowledge*"" Lewis' recommendation then was for restriction of the number of research-dominated universities and expansion of the proportion of essentially teaching institutions on

the American rather than the British pattern. Judging from the recent growth in the number of teaching-dominated undergraduate institutions in many Caribbean countries, it does seem that the Lewisian chickens are coming home to roost.

6.9 A new challenge therefore confronts the older research-dominated institutions. They have to fundamentally differentiate themselves from the purpose-created teaching universities and colleges. They can only do so by reorganising themselves through requisite reconfiguration of academic staff and physical resources to produce the kinds of products which are the trademarks of research-dominated universities, namely, much higher ratios of postgraduate to undergraduate students, more high quality research output and better interface with business and government. This is easier said than done for at least three reasons. **First**, there would still be tremendous pressure by the external publics, notably governments, for expansion of undergraduate output. **Second**, the quasi-fixity of intellectual capital and plant and equipment constrain the speed of adjustment. **Thirdly**, the innate conservatism of universities where the stock of knowledge seems to matter more than increments to the stock of knowledge together with a predominance of inertia have tremendous influence on university decision-making, too often delaying decisions, obstructing change, and working against strategic choices. For Caribbean universities to succeed, they would have to convince their respective governments that there is economic and social value in knowledge-deepening. They would also have to introduce newer forms of contracting and other ways of managing academic personnel so as to better facilitate change and renewal and achievement of critical mass.

7. UNIVERSITY EDUCATION AND QUALITY OF GOVERNANCE

7.1 Higher education provides enlightenment and develops analytical capacity in addition to the specialised knowledge and skills. Its graduates acquire capacity to understand issues and problems in their national regional and international dimensions. They learn to appreciate the fuller meaning of participatory democracy. Universities contribute to the understanding and acceptance of social responsibility and to the virtues of tolerance and respect for social diversity. All these civic values nurtured in university curricula should contribute to improvements in public and private governance.

7.2 Universities also contribute directly through provision of advisory services, especially to the public sector but also to the corporate and non-governmental sectors. This contribution often goes unheralded and unquantified, but it is significant in Caribbean countries which still have substantial deficits in expertise across a wide range of disciplines and professions.

8. THE PROMOTION OF CULTURE

8.1 W. Arthur Lewis (1974) dealt separately with two aspects of *"culture"*: social relations and aesthetics. They are not really separate. Culture in the popular meaning of aesthetics and artistic sensibility is a powerful instrument for building

social relations. For example, the UWI Centre for the Creative and Festival Arts at St. Augustine, Trinidad has used theatrical productions to address the problem of male violence against females in domestic situations.

8.2 Higher education can contribute to sustainable development if it promotes social cohesion. As noted earlier, domestic political instability as a consequence of social splintering and destructive rivalries can exert substantial negative influence on economic growth and development. Furthermore, higher education can also play a valuable role by nurturing social responsibility which itself is a contributory factor to social cohesion and national purpose. Additionally, universities can instill values which link rewards to effort.

8.3 With ascendancy of commercial utilitarianism in academic and professional curricula, universities have effectively although perhaps unintentionally, backed away from their role of promoting social cohesion and social responsibility. In so doing, they have left a vacuum in which greed and selfishness flourish. In this respect, Caribbean universities are becoming more like mirror images of their societies than influential agents for social transformation. However, all is not lost. There is recognition among educational planners that courses in ethics, philosophy, history and so on have real value in education for good citizenship and corporate and public leadership.

9. **FINAL REMARKS**

9.1 This paper has sketched several aspects of the role of higher education in sustainable economic development and has sought to provide indications of the significance of that role.

9.2 Except for some of the recent research on rates of return to university education, there is hardly any empirical demonstration of the significance of universities and other higher education institutions to sustainable development in the Caribbean: neither by socio-economic benefit analysis or by case studies of particular activities and outputs. Therefore, the value of higher education remains a presumption too easily dismissed or minimised by political directorates when the politics of convenience dictates. Casual references to the number of graduates in high public office and in senior management positions in business while sufficient for illustrative purposes are not compelling in budgetary competition.

9.3 Higher education institutions can do themselves much good by undertaking the necessary empirical work on their significance to the communities they serve. By helping themselves in the fierce competition for funds, they will be better equipped to continue their valuable work towards sustainable Caribbean development.