Proceedings of the 27th West Indies Agricultural Economics Conference

In collaboration with

The Ministry of Agriculture and Fisheries, Belize,

Caribbean Agricultural Research and Development Institute (CARDI),

The University of the West Indies (UWI)

and

la Asociación de Latinoamérica y del Caribe de Economía Agrícola (ALACEA)

Improving Marketing and Sustaining Natural Resource Systems in Latin America and the Caribbean

Belize City, Belize

23rd - 27th July, 2007

Sharon D. Hutchinson
Editor

Can One Size Fit All? An Analysis of CARICOM Agricultural Development Policy Formulation

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Abstract

Agriculture is an economically important sector for the Caribbean Community (CARICOM) contributing to food security and rural development. This is partly evidenced by the convening of the June 2007 Agriculture Donor Conference and the ongoing online discussion on arresting the decline of the sector. In this context, the paper identifies some core issues pertaining to agricultural policy for CARICOM countries, among these being: the macroeconomic environment, land and agro-climatic characteristics, institutional and infrastructural frameworks and the characteristics of agricultural enterprises. The discussion traces the agricultural policy formulation process within CARICOM then briefly examines established economic theory pertaining to agricultural development. A fundamental issue stressed is that the economic agent makes production decisions in his or her self interest. A schematic illustrating policy, market, technical and related influences on the decision environment of the economic agent, is used to highlight perceived agricultural policy deficiencies within the context of CARICOM country characteristics pertinent to agricultural output. Evidence presented on the diverse cross country macroeconomic, meso-economic, agro-ecological, institutional and infrastructural environments leads to the conclusion that a differentiated policy paradigm is more appropriate for the countries of CARICOM than the 'one size fit all' policy that is currently being pursued.

Keywords: CARICOM, agricultural policy, institutional framework, food security

Introduction

Agriculture is regarded as economically important, commanding

considerable interest from the regional governments, as evidenced by the June 2007 'Agriculture Donor Conference' that focused on transforming agriculture within the Caribbean Community (CARICOM) and ensuring food security and rural development within the region. This event, jointly sponsored by the CARICOM Secretariat and the Food and Agricultural Organisation of the United Nations (FAO), was another stage in the evolution of the Caribbean Community agricultural policy framework, designed to address the development and growth of the agricultural sector across non-homogeneous countries.

In this paper, some core issues pertaining to agricultural policy for the countries of the Caribbean Community are indentified, using a standard framework for agricultural policy formulation and established economic theory. Based on the theoretical constructs and country experiences pertaining to agricultural development, we posit that changes in the policy prescription for agriculture are necessary in order to optimize the output from the heterogeneous agricultural sector of the countries in the Caribbean.

The discussion is organized in six sections. The first section reviews the contribution of agriculture to the economies of the CARICOM countries. Section 2 presents a historical overview of agricultural policy formulation in CARICOM. The third section briefly examines established economic theory about agricultural development and introduces a schematic illustrating policy influences on economic agents in agriculture. The fourth section presents a review and appraisal of critical physical, agro-ecological and socioeconomic characteristics of Caribbean countries that must be considered in any agricultural policy formulation paradigm for CARICOM countries. Section 5 reviews the current policy initiatives in CARICOM within the context of the schematic for policy influences on the economic agents in agriculture. The final section synthesizes the findings of the previous sections and posits an alternative and differentiated policy formulation paradigm for agricultural policy for the CARICOM countries, and an indication of a strategy for its formulation.

Agriculture and the Economy in CARICOM Countries

Output, employment and industry linkages: The agricultural sector contribution is non-uniform across the economies of the CARICOM countries. The agriculture value added in the gross domestic product (GDP) in 2003 ranged from 31.4 percent and 27.9 percent respectively in Guyana and Haiti, to 3.8 percent and 1.1 percent, respectively, in Antigua and Barbuda and Trinidad and Tobago (Table 1). Measured in constant 2000 US dollars, the sector's output in 2003 for these countries is 194.57 million

for Guyana, 0.78 million for Haiti, 23.42 million for Antigua and Barbuda and 106.93 million for Trinidad and Tobago (World Bank, 2007). Comparing the three sectors of agriculture, industry and services (Table 1), Guyana is the only country where agriculture is the largest sector and the relative contributions of the three sectors are close, with a spread of about seven percentage points. Only in five instances does the output from agriculture exceed 10 percent of the overall economy.

Yet, the agricultural sector plays a critical role in employment, accounting for at least 20 percent of total employment in five countries. Agricultural employment exceeds 50 percent in Haiti while in Belize, Dominica and Guyana it is close to 30 percent and in Jamaica 20 percent. Of the other CARICOM countries only in St Lucia and St Vincent and the Grenadines does agriculture absorb more than ten percent of total employment. In contrast, the services sector in all the countries accounts for more than 50 percent of employment, except for Guyana at 48 percent and Haiti at 39 percent (Table 2).

Besides providing employment, domestic food supplies and the export of primary products, the sector is also integrated with domestic manufacturing as evident with the production of alcoholic beverages in at least six countries[1]. Linkages also occur with agro-processing enterprises.

Some large and medium sized firms are producers of sugar, rum, beer, carbonated beverages and other products from local as well as imported raw material. In contrast, small and micro enterprises manufacture juices and nectars, jams and jellies, sauces, spices and condiments and other preserved foods, mainly from local raw materials (Rolle, 2003). In their survey of firms (including those in agriculture) in five selected CARICOM countries, Gordon and VanSickle (2007) found that the firms were multi-faceted with many operating in more than one area. There were only 6 percent of the respondents involved solely in agriculture as compared with 42 percent involved in agriculture and manufacturing. The agricultural sector in CARICOM is a key contributor to some aspects of food security of the region. This is manifested by the provision of jobs, contribution to the domestic food supply and contribution to foreign exchange earnings.

Agriculture-tourism linkages: In many of the Caribbean countries, the economic linkages between the agricultural and tourism sectors vary depending on the characteristics of the tourism product (Mc Bain, 2007). In general, when the tourism product is delivered through all-inclusive resorts or large international hotel

[1] Barbados, Belize, Guyana, Jamaica, St Lucia, and St Kitts and Nevis

chains, there are fewer linkages with the local economy. Instead, there is considerable leakage of earnings because of importation of inputs as well as repatriation to foreign owners and tour operators. This can be observed in countries such as Antigua and Barbuda, The Bahamas, Jamaica and St Lucia where the tourism product emphasizes sun, sand and sea (Mc Bain, 2007). The author chronicles three instances of a stronger linkage, one in Nevis and two in Jamaica, because of the successful establishment of projects to increase the supply of locally produced agricultural products to large resorts or all-inclusive hotel chains.

A Caribbean Hotel Association co-sponsored study of members' purchasing patterns, with fifty seven percent of respondents being conventional hotels and fifty two percent small hotels of 75 or less rooms, revealed that 74 percent of vegetables were sourced locally, 11percent regionally and 15 percent extra-regionally. For dairy products, 67 percent were sourced locally, 10 percent regionally and 23 percent extra-regionally. Local meat purchase was 63 percent, but 72 percent of the fish requirements were sourced extra-regionally, with only 20 percent being obtained locally and 8 percent regionally. For fruits, 77 percent were sourced extra-regionally, 16 percent locally and 7 percent regionally. Ninety percent of eggs were sourced extra-regionally and the remainder locally (Tourism Global Inc, 2007).

Overview of CARICOM Agricultural Policy Formulation and Implementation

Earlier Initiatives: Historically, attempts at galvanising agricultural growth within CARICOM were influenced by the assumption that such growth could be fuelled by regional level efforts as implied by Brewster and Thomas (1967). This is evidenced by proposals contained in the Regional Food Plan (RFP) of 1976, the Regional Food and Nutrition Strategy (RFNS) of 1980 and the Caribbean Community Programme for Agricultural Development (CCPAD) of 1988. The goals of these initiatives were similar and related to the increased output and productivity of agricultural enterprises. The goals were intended to realise increased per capita income, greater equity and improved quality of life of both producers and consumers. Objectives of the RFP and the RFNS were: (1) increased food security, (2) diversification of production and markets, (3) increased linkages within and between sectors, (4) promoting a greater flow of resources into the sector, (5) improvements in technology and infrastructure as related to production and marketing, and (6) increased access to and more appropriate distribution of resources across enterprise groups. Projects associated with earlier initiatives were

conceived within production and support programme areas (CARICOM Secretariat, 1987). In the later CCPAD, the objectives were similar but more focussed. However, programme areas were also broadly prescribed to include: (1) public policy and planning, (2) project planning, (3) farm management, (4) agronomy, (5) horticulture, (6) livestock production, (7) food and nutrition, (8) agricultural research extension and training, (9) credit and input supply, (10) domestic, regional and international marketing, and (11) post- harvest and process technologies (CARICOM Secretariat, 1988).

Conceptually and operationally, the activities designed within each of the regional initiatives took the form of projects to be implemented by regional agencies. This approach created and sustained the expectation of a regional level 'push/pull' effect on the output of the agricultural sector. Within this paradigm there was limited, if any, specific consideration for either the capacity or role of the economic agent in the sector.

The Regional Transformation Programme for Agriculture (RTP) of 1996 sought to move away from the above policy paradigm by emphasizing that regional level activities must be supportive and complementary to national level plans. This paradigm shift was specifically transmitted to governments (CARICOM Secretariat, 1996). In follow up, the agencies implementing the RTP actively sought to elicit national level plans from the governments involved, but to little or no avail.

It is contended that there were at least three major difficulties associated with the 1996 RTP. The first related to nomenclature. The name 'Regional Transformation Programme' effectively perpetuated the premise of a regional level push/pull effect on agricultural output. This persisted despite explicit and implicit recognition within CARICOM circles that regional action must be designed to complement national initiatives. A name such as *'Transformation Programme for Agriculture in the Caribbean Community'* may have induced member states and participants to embrace the intended interpretation of the concept of support to national interests within the regional initiatives, and perhaps lead to a more responsive attitude from countries when asked for information about their national requirements.[2] The second difficulty pertained to the attempts to identify national issues that ought to be addressed by complementary regional level action. National responses in this respect were woefully inadequate since, for the most part they did not emanate from interfacing directly with producers. Rather, information was biased

[2] Some country officials actually indicated that they expected the CARICOM Secretariat to prescribe their national needs.

towards the views of technocrats within the Ministries of Agriculture. Consequently, despite the attempted paradigm shift, the RTP is perceived as falling short of expectations.

At its inception in 1996 there were no special funds set aside for regional level action identified for implementation within the RTP. This has been perceived as a third constraint to the success of the RTP.

The Jagdeo Initiative (JI): In 2005, the Heads of Government of CARICOM endorsed the Jagdeo Initiative (JI), directed at identification and alleviation of key binding constraints to the agricultural sector in CARICOM. The traditional export crops of bananas, sugar and rice were excluded. Nine constraints were identified following national and regional consultations and interventions proposed at the national and regional levels for their alleviation. The identified priority constraints were: (1) Limited and inadequate levels of new investments; (2) Deficient and uncoordinated risk management measures; (3) Fragmented and disorganized private sector; (4) Inadequate research and development; (5) Outdated and inefficient agricultural health and food safety systems; (6) Inefficient land and water distribution and management systems; (7) Inadequate transportation systems particularly for perishables; (8) Weak and inadequate information and intelligence systems, weak markets and lack of linkages and participation in growth market segments; (9) Lack of skilled human resources (CARICOM Secretariat, 2007b).

The four thematic areas proposed as mitigating areas were: (1) An enabling business environment pertaining to financial, physical and institutional arrangements; (2) Expanding supply capacity and competitiveness; (3) Developing and empowering agricultural entrepreneurs through the strengthening of private sector organizations in agriculture; and (4) Promotion of economic, social and environmental sustainability with efficient resource management.

The theme of the aforementioned June 2007 Agriculture Donor Conference was 'Transforming CARICOM Agriculture: Ensuring Food Security and Rural Development in CARICOM'. At the conference a combined 53 projects (39 national and 14 regional) were presented for funding consideration. Projects were grouped under four themes as (1) Enterprise development and trade facilitation; (2) Technology development and transfer; (3) Enabling environment; and (4) Food security and sustainable development. Table 4 presents a listing of the Agriculture Donor Conference projects with country and regional links to the thematic areas. These projects collectively constitute the most recent articulation of the CARICOM agricultural policy. The explicit assumption is that, individually or

collectively, the projects, listed in Table 4, will ultimately lead to the achievement of some (or all) of the Community's agricultural goals as identified in The CARICOM Treaty (CARICOM Secretariat, 2002). These are: (1) market oriented production that is internationally competitive, (2) improved income and employment, food and nutrition security, and poverty alleviation, (3) efficient production systems for both traditional and non-traditional primary agricultural products, (4) greater production and diversification of processed agricultural products, (5) increased market share, globally, for both primary and processed products and (6) the efficient, sustainable utilization of the natural resource base for both terrestrial and living marine resources. This expectation is based upon the alleviation of the constraints identified in the JI (CARICOM Secretariat, 2007c). This assumed policy path will be subject to further analysis.

Some Critical Theoretical Issues Pertaining to Agricultural Development

Analysis has shown that there is a high propensity for agricultural development practitioners to pursue goals for the development of the sector without knowledge of or attention to the economic theory pertaining to the activities of the economic agents in the sector. In this regard Stevens and Jabara (1988) pointed out that knowledge of the theory underpinning the experience of agricultural development can enable practitioners to better utilise the scarce available resources involved in designing and implementing effective agricultural growth and development policies and strategies. Some important related issues are (1) technological change and growth in output (Ruttan and Hayami, 1998), (2) influences of the transformation of traditional agriculture (Schultz, 1964), (3) access to land and cultivation rights (Biswangser and Elgin, 1998), and (4) the meso-economic and macroeconomic policy environments (Timmer, 1998; Zezza and Llambi, 2002).

Induced Innovation Theory: Ruttan and Hayami (1998) modelled the determinants of growth and technological change in the agricultural sector through the dynamic interaction of four major characteristics of the development process namely (1) resource endowments, (2) cultural endowments, (3) technology and (4) institutions. The efficient interaction of these characteristics is influenced by the impact of extant relative prices. Changes in any one of the four elements could induce changes in the others on account of the prevailing market dynamics. Consequently, Ruttan and Hayami (1998) recognised that multiple technological paths to increased agricultural output exist across countries, each influenced differently by the efficient use of the

respective country factor endowments. Alternatively, two similar sets of resource endowments may induce different technological, cultural and institutional changes in two countries because of differences in other characteristics and market conditions. The key issue is that these changes are endogenous to the economy in question and represent a dynamic response to market conditions and differences in the respective characteristics.

High-Payoff Input Model : Schultz (1998) advocated the transformation of traditional agriculture through a concentration on agricultural research and the improvement of the technical capability of farmers through training or human capital formation. He argued that the farmer: (1) responds to incentives; (2) is an efficient resource user; (3) does not mimic a neighbour who is operating in the same traditional manner; (4) has a limited amount of capital available for investment; and (5) usually achieves a low return on capital investment, using the traditional technology (Schultz, 1964). He advocated that these farmers would respond to prevailing market incentives to increase output if they had access to the technical capacity and technology with which to respond. Stephens and Jabara (1988) observe that Schultz's model partially explains the occurrence of agricultural growth in a country and indicates a basis for increasing agricultural productivity among traditional farmers through capacity enhancement.

Agrarian Reform Issues: Land is a very important policy issue in developing countries, particularly since access to land is a means of sustainable livelihood. Therefore, it is very important to determine how land is made available to peasants. Binswangser and Elgin (1998) have observed that land reform policies, which confer on the poor ownership rights or permanent cultivation rights to specific parcels of land, could be considered successful when it results in increased income, consumption or wealth. The converse holds if the poor were worse of than before.

Meso-economic Variables and Agricultural Policy Impact: Zezza and Llambi (2002) reviewed the impact of macroeconomic and agricultural policy reform in Latin America and its influence on the alleviation of rural poverty. Their study identified market mechanisms and public administrative procedures as the two main channels for the transmittal of policy signals to economic agents. Zezza and Llambi (2002) demonstrate that these meso-economy channels are endogenous to the economy and serve as a filter of the policy signals. As a consequence, they conclude that within a country context, the meso-economic variables are applicable at the national, regional and local levels when undertaking

public policy formulation and analysis (Zezza and Llambi, 2002).

The above theoretical constructs on agricultural production and productivity are all relevant to the agricultural sector of the CARICOM countries, particularly in instances where there are cross-country differences. This is substantiated by empirical findings pertaining to the Ruttan and Hayami (1998) characteristics, the human capital endowment, the land tenure patterns and by the Zezza and Llambi (2002) meso-economy variables.

The Farmer or Producer as an Economic Agent: Economic theory asserts that an economic agent makes production decisions under the assumption of optimising behaviour. Among the issues that the economic agent must consider when seeking to optimise the extant production operations are: (1) The availability and cost of the inputs or factors of production, (2) The prices of the outputs, (3) The markets for the outputs, and (4) The technology available to produce the desired outputs. In support of these theoretical principles, the experience of a diverse set of countries has established that one of the major influences on output is the macroeconomic environment in which the economic agent operates. Broadly speaking, this environment is conditioned by the monetary and fiscal policies embraced by the government of the country in which the economic agent operates. In his analysis of the impact of macroeconomic policy on agriculture, Timmer (1998) discusses the impact of five prices, termed 'macro prices' that are a spin-off of a government's macroeconomic policies. He demonstrates how the macro prices - wage rates, interest rates, land rental rates, foreign exchange rates and the rural-urban terms of trade- are determined by a government's macroeconomic policy and in turn influence the production and investment decisions of producers. Considering just one of the five critical macro prices, the exchange rate, there are nine different prices facing the economic agents in the agricultural sector within the states of the Caribbean Community. Of these nine prices, five are arguably market-determined rates (reflecting real prices) while the others are fixed because of the prevailing exchange management policy (and likely overvalued) (Table 3). If only with regard to this macro price, the circumstances of the economic agent ought to be assessed by country, within the agent's own environment when attempting to formulate an appropriate agricultural policy framework.

Timmer (1998) addresses the issue of decision-making in agriculture with considerable insight. He observed that decision-making in the sector, whether in private operations or collective ventures, is conditioned primarily by the nature of incentives to work rather than characteristics of the

work itself. Decisions must be made with respect to, *inter alia*, crop selection, inputs, production technology, harvest times, sales, storage, and home consumption. Timmer (1998) stated that contractual arrangements affect the efficiency of the outcomes and highlighted the peculiarity about agricultural production as follows:

> "*What is unique about agriculture is that literally millions of individuals and households are making these decisions themselves. Changing agricultural production decisions to increase food output is an entirely different process from changing decisions about how much steel or cement to produce. In most countries, a dozen or so individuals could take direct action that would lead to a 10 percent increase in steel output in a year or so, and their decisions would be decisive.*
>
> *Nowhere, not even in socialist countries, can a similar small group of individuals decide to raise food production by 10 percent. A small group of planners, or the president and the cabinet, can decide they want food production to rise by 10 percent. They can tell the food logistics agency, the ministry of agriculture, the newspapers and the agricultural extension agents that they want food production to rise by 10 percent. But they cannot increase food production by 10 percent themselves. They must also convince the millions of farmers in their country to want to increase food production by 10 percent and make it in their self interest to do so*." (Timmer, 1998).

This particular insight of Timmer's establishes the tenet that in order to achieve the goal of increased agricultural output the focus should be on influencing those who make the key decisions with respect to agricultural output, namely the producers. In order to do this it is necessary to be aware of the conditions that the producers assess when making their decisions and understand the manner in which those conditions influence the decisions they make. This highlights the importance of assessing and evaluating the circumstances of the producer, prior to formulating policy for increasing agricultural output. It emphasises that a policy paradigm must incorporate the characteristics of different producer environments and address the issues of various producer groups, based on economic theory and empirical evaluation, as a prerequisite for successful policy goal achievement.

The foregoing elements of the policy matrix do not exist in isolation but are highly interactive in the dynamics of the situation, as illustrated in Figure 1. Policies formulated in the macro environment are perceived by the economic agent

through the meso-environment filters. The agent's production decisions are influenced by, *inter alia*: (1) the perceived policies, (2) target market signals (3) inputs and technology, and (4) research and development as well as technical support. The resulting outputs feed to the respective markets. From the perspective of agricultural planners, goal performance evaluation should lead to policy refinement, as may be required.

Some CARICOM Countries Characteristics Pertinent to Agricultural Output

The research philosophy and activities of the (farming) Systems and Management unit of the School of Agriculture, Policy and Development (APD) of the University of Reading in the U K are guided by observations on issues relating to: (1) the difference in farming between areas, (2) differences in adjacent farms and (3) the elements to which farmers respond in their decision making. This is because, *inter alia*, these issues are influenced by factors such as: (1) the prevailing agro-climatic environment; (2) population characteristics and culture; (3) capital availability and access thereto; (4) land tenure arrangements; (5) politics; and (6) farming technology, inputs and support systems (University of Reading et al., 2005). A farming systems research strategy of the Commonwealth Scientific and Industrial Research Organisation (CSIRO) of Australia is similarly guided (CISRO, 2007). Given that the prevailing circumstances in the agricultural environment influence the technology set and related inputs it is useful to examine of some of the parameters that influence agricultural output in CARICOM countries.

The Macroeconomic Environment: Stephens and Jabara (1988) argue that the macroeconomic environment greatly influences the prices received by farmers and those paid by consumers, and ultimately the performance of the agricultural sector. Consequently, this factor will affect the decisions of producers. The macroeconomic environment across Caribbean countries varies tremendously. Previous mention was made of the nine different exchange rate regimes.

Land and Agro-climatic Characteristics: Another characteristic related to agricultural output is the available arable land and the associated agro-climatic conditions. World Bank data (Table 3) show that there is considerable variation in the range of area of agricultural land within CARICOM states. The arable land endowment of St Kitts and Nevis is the smallest at 10,000 hectares while Guyana's is the largest at 1.74 million hectares. Besides Guyana, four countries have an arable land endowment greater than 100,000 hectares namely: Belize, Jamaica, Haiti and Trinidad and

Tobago. Agro-climatic conditions show similar variation, even within relatively small countries. For example, the island of St Kitts, with an area of 176 km^2, was reported to have distinct microclimates with annual rainfall on the southeast part of the island about 1,020 mm (40 inches), while in the central mountain ranges it is about 5,380 mm (150 inches) (Roebuck et al., 2004). Similarly, agro-climatic circumstances influence different optimal start times for the growing season, under rain-fed conditions, in Barbados (Trotman, 1994) and Trinidad and Tobago (Aaron, 2004).

Given the predominance of rain-fed production systems in Barbados, Trotman (1994) suggested then that water was likely the most limiting factor to (increased) agricultural output. World Bank data (Table 3) indicate that in only four countries does the proportion of irrigated arable land exceed 10 percent. These countries are St Lucia (17 percent), Barbados and Guyana (29 percent each) and Suriname (75 percent). These data do not convey any information on the crops with which these irrigation regimes are associated but based on existing knowledge, it is a safe assumption that for St Lucia it is bananas, for Barbados sugar and for Guyana, sugar and rice.

Institutional and Infrastructural Frameworks: Legal and institutional arrangements that provide for secure land tenure have a definite impact on agricultural output (Stevens and Jabara, 1988). Distribution and ownership of land also affects its productivity. Studies show that sustained utilization of land that is farmed under title or extended lease option is associated with higher productivity (Shearer et al., 1991; Stevens and Jabara, 1988). Shearer et al (1991) concluded that a distinguishing feature of the land holdings in many Caribbean countries was the ownership of good cropland by sugar plantations and the relegation of small farmers to the use of fragile lands and marginally productive hillside plots. Shearer et al (1991) identified a family ownership feature of agricultural lands in the Windward Islands and Jamaica, where a given plot was legally owned by several members of one family, but farmed by one member. Conflicts were rare but fragmentation was unlikely. However, the resulting insecurity of tenure militated against investment associated with improved productivity (Shearer et al., 1991).

In 1996, the government of Trinidad and Tobago indicated its desire to revitalize the country's agricultural sector. Towards that goal investment was being channeled to the improvement of agricultural infrastructure. Land and access roads development, marketing infrastructure and drainage and irrigation were infrastructural areas identified as focal points for increasing sectoral output

(Moe, 1996). In the same year the government of St Kitts and Nevis also articulated the need for improved infrastructure as a precursor to increased agricultural output (Douglas, 1996). In light of these constraints, we present data on the road network in the respective countries in Table 3. These data are intended to convey varying degrees of infrastructural weakness across countries, in one aspect affecting agriculture, that of feeder roads. Although these data pertain mainly to 1999, information presented at the June 2007 CARICOM Agriculture Donor Conference indicates minimal change in the status quo. This is reflected in the preparedness the Caribbean Development Bank to invest in access roads and related agricultural infrastructure requirements (Bourne, 2007). Also, improvement in irrigation was an objective within several of the national project proposal summaries also presented to the Agriculture Donor Conference (CARICOM Secretariat, 2007a).

Characteristics & Categories of Agricultural Enterprises: Paul (2002) characterized the farming enterprises across the Caribbean into four groups: (1) Many small traditional subsistence farmers, with small mixed cropping family farms on marginal hilly lands; (2) A few commercially oriented small farmers, focused primarily on the domestic market with occasional intra-regional exports; (3) A few larger commercial farmers concentrating on the extra-regional export market; and (4) A few unproductive large farms, idle because of absentee ownership. Paul (2002) also identified constraints affecting these farming systems. However, he did not indicate whether the constraints impacted uniformly or differentially across the four groups, or across countries. The constraints identified included: (1) A policy environment skewed to the larger commercial farmers; (2) The inherent low productivity of the marginal holdings of small farmers together with increased risk from periodic adverse agro-ecological conditions; (3) Poor supporting infrastructure such as access roads, affecting the quality and marketability of the output; (5) A high dependence on imported inputs and the associated environmental problem caused by excess residues; (5) Weak marketing systems and arrangements, particularly for the non-traditional commodities; (6) Weak agricultural support systems, especially research and development (R&D); and (7) Increased competition from imports because of the opening of markets following globalization.

In their study of the affects of macroeconomic structural adjustment on small farms in Jamaica, LeFranc (1994) found that the small farm sector was heavily involved in production for exports as well as for the domestic market. This discussion assumes that there has been no

significant change in the small farm production profile in that country.

The above review of country characteristics associated with agricultural output in the CARICOM countries is not exhaustive. However, we contended that it supports the case for a differential approach to agricultural policy formulation and design for the CARICOM countries.

CARICOM Agricultural Policy Revisited

The CARICOM agricultural policy prescription as outlined in the JI and associated projects, is expected to catalyse the economic and business environment to promote successful and sustainable entrepreneurial activities in the agricultural and rural sector of the CARICOM. A resurgence or transformation of the regional agricultural sector is anticipated (CARICOM Secretariat, 2007c). The implication is that this common policy framework being broadly applied to all the countries will lead to the achievement of the CARICOM agricultural goals outlined earlier in this paper. In essence this strategy could be described as a 'one size fits all' agricultural policy. The likelihood of success of such a policy can be evaluated using the schematic for policy influences on agricultural decision making entities we have provided in Figure 1.

The areas covered by the suite of projects include: (1) Infrastructure, (2) Agriculture health and food safety, (3) Production of selected crops and livestock, (4) Agro processing, (5) Food security, (6) Fisheries and aquaculture, (7) Natural resource management, (8) Research and development, (9) Irrigation, (10) Marketing and marketing development, (11) Agri-business development and finance, (12) Hazard impact mitigation, (13) Land use planning, and (14) Horticulture. The collective of projects may appear to address the key constraints identified within the JI. However, there are no obvious links connecting the various projects between an identified target market and the economic agent making production decisions. Further examination of the project descriptions reveals gaps such as (1) No specific consideration of establishing incentives for the economic agents, (2) Spotty attention to the identification of specific market requirements, (3) No obvious consideration of the impact of the macroeconomic and meso-economic environments, (4) Lack of specificity for addressing producer productivity deficiencies, (5) Apparent identification of project focus without reference to market demands, and (6) Lack of specificity in the identification of commodities targeted for production increases. This approach is compounded by the implicit ignoring of the differences in the macroeconomic and meso-economic environments across the countries. In summary, when contrasted with the schematic for policy influences on agricultural decision making entities

presented in Figure 1, the CARICOM agricultural paradigm conveys (1) lack of acknowledgement of differences in the macroeconomic and meso-economic environment across the countries, (2) no appreciation for the different agro ecological conditions influencing the economic agents in the countries, (3) weak understanding of the market influence on decisions of the economic agents and (4) apparent oversight of the pivotal position of the agricultural economic agent in determining output.

In their survey of the business environment of selected CARICOM countries Gordon and VanSickle (2007) sought to determine the impact of CARICOM policies on firms' current business environment and future investment decisions. Among the CARICOM policy areas about which an opinion was sought were (1) The CET, (2) WTO trade negotiations, (3) EU trade negotiations, (4) Agriculture (5) Fisheries, (6) Industry, and (7) Transportation. The survey found that agricultural firms did not perceive any of the CARICOM policy areas as having a positive impact on their business. Some firms are multi-faceted in operations and for the Agricultural and Manufacturing group, CARICOM agricultural policy was perceived as having no impact on business operations (Gordon and VanSickle, 2007).

Our analysis above leads us to conclude that the current CARICOM agricultural policy paradigm will, at best, lead to minimal and unpredictable increase in output and productivity of the agricultural sector of the countries. At worst the debate concerning the non-performance of the sector will continue. Consequently, we move to outline below a policy formulation paradigm that we consider more viable.

A Differentiated Agricultural Policy Paradigm for CARICOM Countries

Our earlier discussion has established that, for success in goal achievement, agricultural policy formulation must seek to stimulate a specific desired producer response. A prerequisite is policy makers and planners appreciating that decisions on the production of agricultural output are taken independently by the multitude of economic agents at the farm and processing plant level. This will demonstrate recognition that the success of the policy is dependent upon the ability of the policy to stimulate desired action by the respective economic agent. Among the milieu of issues informing the policy mix are: (1) the macroeconomic environment of the country; (2) the profile and production mix of the farming sector; (3) the profile and product set of the agro processing sector; (4) the agro–ecological environment; (5) producer specific research and technological support; (6) land tenure arrangements; and (7) in-country institutional and infrastructural arrangements.

The diversity in these factors across CARICOM countries suggests

a differential approach to agricultural policy formulation for the countries of CARICOM with the initial focus being on the extant farming systems and agro enterprise groups, on a national basis. This will allow for more efficient targeted policy intervention dictated by commodity, or target markets such as exports, the domestic food supply or the domestic tourism sub-sector. It will also permit more effective monitoring of the policy impact and more effective policy adjustments as may be required.

This differentiated policy paradigm will require much more extensive consultation than currently obtains, with the economic agents in the production environments. A major benefit of this strategy is that it will automatically embrace the elements of producers' macroeconomic and meso-economic environments.

In this scenario production support activities such as agricultural research are developed specific to the respective farming systems pertaining to improving output and productivity of the countries and commodities in question. A useful model for such a strategy is the establishment of research facility to address post harvest difficulties that were being experienced with the marketing of Chilean apples and pears. The University of Talca and a private sector consortium comprising producers, nurseries, agrochemical companies and exporters jointly fund the Centro de Pomáceas. Initially the government of Chile also contributed. That collaborative research has resulted in the expansion of the market share for Chilean apples and pears in the United States; one of the country's larger markets (University of Talca, 2007). For Caribbean countries there may be some elements of the research activity common to similar systems across countries. The important issue is that there is no *a priori* assumption that a specific research thrust is applicable across the board. Rather the research projects must indeed be market driven and, for optimal effectiveness, the framework for the focus, design and funding of the research activity must integrally involve the agro entrepreneur. Accordingly, there will have to be a differentiation of the research support for the domestic and export markets to accommodate likely different research requirements.

Agricultural health and food safety is perceived as the one area amenable to a common approach across countries, *a priori*, because the applicable minimum standards are applied internationally. Here also, however, in the event that selected target markets require standards that are more stringent, appropriate policy adjustments may be required.

Conclusions

Ignoring the economic theory and empirical evidence pertaining to increasing agricultural output and productivity within CARICOM will likely continue to result in sub-optimal

goal achievement. A strategy of differential agricultural policy design and implementation across the countries of CARICOM seems more appropriate because of cross-country differences in the macroeconomic and meso-economic environments as well as agro-ecological, institutional and infrastructural differences. Foremost among the policy areas that dictate the need for a differentiated policy paradigm is the macroeconomic environment encompassing policy parameters such as foreign exchange rates, interest rates, wage rates, land rental rates and rural-urban terms of trade. Exports require a policy mix separate to that for the domestic food supply. The development of the framework for research and related support must be market driven with strong links to the commodity in question and integrally involving the agro entrepreneur in all key phases: focus, design and funding. Within a differentiated paradigm, research must also separately address the needs of exporters and domestic food suppliers. Agricultural health and food safety is the one policy area likely amenable to a common approach across the countries, from the onset.

A bottom-up approach soliciting and incorporating inputs from a representative mix of producers, agro processors and other relevant stakeholders seems *sine qua non* to the evolution of an appropriate differential policy paradigm for the agricultural sector of the CARICOM countries.

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Table 1: Selected Economic Performance Indicators for CARICOM Countries: 2003

Countries	Output Indicators			
	GDP Total (constant 2000 USD) ('000)	GDP Agriculture %	GDP Industry %	GDP Services %
Antigua/ Barbuda	735,108.864	3.77	21.08	75.15
The Bahamas[3]	4,938,247.680	N/A	N/A	N/A
Barbados	N/A[4]	4.47	16.12	79.41
Belize	1,002,899.968	16.65	17.49	65.86
Dominica	255,990.720	18.28	23.07	58.65
Grenada	425,590.496	9.77	24.14	66.09
Guyana	728,679.744	31.44	27.19	24.26
Haiti	3,711,993.088	27.92	16.97	55.11
Jamaica	8,491,644.928	5.49	31.66	62.84
St Kitts/ Nevis	341,550.560	3.03	28.09	68.99
St Lucia	682,979.776	5.27	18.11	76.62
St Vincent/ Grenadines	344,594.816	8.76	24.48	66.77
Suriname	1,012,462.656	10.67	21.36	67.96
Trinidad/ Tobago	10,401,797.120	1.1	51.53	47.37

Table 2: Selected Economic Performance Indicators for CARICOM Countries, 2003

Countries	Employment Indicators		
	Employment Agriculture %	Employment Manufacturing %	Employment Services %
Antigua/ Barbuda	N/A[5]	N/A	N/A
The Bahamas	3.0	15.8	80.9
Barbados	4.6	17.6	66.8
Belize[6]	27.5	17	55.3
Dominica[7]	27.3	18.2	57.8
Grenada[8]	13.8	23.9	58.6
Guyana[7]	27.8	22.6	47.9
Haiti[6]	50.6	10.7	38.7
Jamaica	20.4	17.4	62.1
St Kitts/ Nevis	N/A	N/A	N/A
St Lucia	11.4	17.7	52.7
St Vincent/ Grenadines[9]	15.4	19.7	56.3
Suriname[6]	6.1	14.5	75.4
Trinidad/ Tobago[10]	6.9	28.4	64.4

[3] Data for the year 2002
[4] Data not available
Source: Compiled from World Development Indicators Online, World Bank, 2007.

[5] Data not available
[6] Data for year 1999
[7] Data for year 1997
[8] Data for year 1998
[9] Data for year 2001

Table 3: Selected Indicators Relevant to Agricultural Output, 2003

Countries	**Selected Agricultural Sector Indicators**				
	Official Exchange Rate[11]	Agricultural Land (ha./sq.km)	Irrigated Land (% of cropland)	Agricultural machinery (tractors/ 100 ha)	Roads, total network (km)
Antigua/ Barbuda[12]	2.7*	14000/140	N/A[13]	300	1165[14]
The Bahamas[15]	1*	14000/140	8	150	2693[16]
Barbados	2*	19000/190	29	366	1600
Belize	2*	152000/1520	3	164	2872[16]
Dominica	2.7*	23000/230	N/A	180	780[16]
Grenada	2.7*	13000/130	NA	60	1127[16]
Guyana	194	1740000/17400	29	76	7970[16]
Haiti	42	1590000/15900	8	2	4160[16]
Jamaica[17]	58[18]	513000/5130	9	177	20975
St Kitts/ Nevis	2.7*	10000/100	N/A	221	320[16]
St Lucia	2.7*	20000/200	17	365	1210[16]
St Vincent/ Grenadines	2.7*	16000/160	7	114	829
Suriname	3	89000/890	75	229	4304
Trinidad/ Tobago	6	133000/1330	3	360	8320[16]

[10] Data for year 2002
Source: Compiled from World Development Indicators Online, World Bank, 2007.

[11] Local currency units per USD, period average
[12] Data for year 2000
[13] Data not available
[14] This statistic for year 2002
[15] Data for year 2001
[16] This statistic for year 1999
[17] Data for year 2002
[18] This statistic for year 2003
* These are fixed exchange rate regimes. The others are market determined.

Source: Compiled from World Development Indicators Online, World Bank, 2007.

Table 4: Project List by Thematic Area CARICOM Agriculture Donor Conference

No.	Project Name (country/regional agency)	Thematic Areas			
		Enterprise Development &Trade Facilitation	Technology Development & Transfer	Enabling Environment	Food Security & Sustainable Development
	National Projects				
1	Rehabilitation of farm and feeder road (Antigua & Barbuda)			v	
2	Agriculture production, marketing and food safety (Antigua & Barbuda)	v			v
3	Training and research facilities for livestock farmers (Antigua & Barbuda)		v	v	
4	Production, marketing and processing of hot pepper (Bahamas)	v		v	
5	Expanding citrus and vegetable production (Bahamas)	v	v	v	v
6	Sustainable fisheries development in Acklins & Crooked island (Bahamas)			v	v
7	Improving small ruminant production in the Bahamas (Bahamas)		v	v	
8	Promoting youth in agriculture through the introduction of greenhouse and irrigation technology (Barbados)	v	v		v
9	Scotland District Development Project (Barbados)			v	v
10	Livestock development and services (Belize)		v	v	v
11	Increasing non-traditional crop sector development (Belize)	v	v	v	
12	Fisheries expansion in Dominica (Dominica)	v		v	v
13	Supporting agro-processing development (Dominica)	v			
14	Replanting damaged cocoa and nutmeg fields (Grenada)	v	v	v	v
15	Food security enhancement for the Rupununi Savannahs Communities (Guyana)	v	v	v	v
16	Livestock support services (Guyana)	v		v	v
17	Sustainable for the development of marine fisheries and aquaculture in Guyana (Guyana)	v		v	v
18	Development of Guyana's agro-energy potential (Guyana)				v
19	Support for the development of maritime and continental fishing in Haiti (Haiti)		v		v
20	Project for establishing aquaculture facilities (Haiti)	v	v	v	v
21	Project for the management of natural resources agricultural intensification				v

No.	Project Name (country/regional agency)	Thematic Areas			
		Enterprise Development &Trade Facilitation	Technology Development & Transfer	Enabling Environment	Food Security & Sustainable Development
	in the mountainous areas (Haiti)				
22	Support for the revival of research/development in Haiti (Haiti)		v		
23	Support for the development of the production of bio-diesel in Haiti (Haiti)		v	v	v
24	Development of poultry production (Haiti)		v		
25	Increasing productivity and competitiveness of the Jamaican coffee industry (Jamaica)	v		v	v
26	Sea Island cotton development (Jamaica)	v		v	
27	Small scale irrigation (Jamaica)		v	v	
28	Ebony Park hot pepper mash and export facility (Jamaica)	v	v	v	v
29	Improving entrepreneurial capacity of farmers and youth in agricultural development (St Lucia)	v		v	v
30	Irrigation development for crop farmers and support for the value chain through to post-harvest and agro-processing (St Kitts &Nevis)		v	v	
31	Development of rain-fed crop production utilizing new and improved technologies (St Kitts &Nevis)		v		v
32	Small ruminant development (St Kitts &Nevis)	v	v		v
33	Cattle expansion and development programme (St Vincent & Grenadines)	v	v	v	v
34	Arrowroot industry rehabilitation programme (St Vincent & Grenadines)	v			v
35	Fruit sector development (Suriname)	v	v	v	v
36	Aquaculture production in Suriname (Suriname)	v	v	v	v
37	Expansion of the irrigated area (Trinidad &Tobago)			v	
38	Strengthening the marketing system and linkages to demand centres (Trinidad &Tobago)	v			v
39	Reducing key institutional constraints to increased agricultural productivity (Trinidad &Tobago)			v	
	Regional Projects				
40	Up-scaled Caribbean Regional Programme for Food Security - Module 2 (The total cost of US$105,257,000 for Module 2 is already incorporated at the national level				v
41	Caribbean Invasive Species Surveillance & Information Program	v			
42	Development of a biologically-based area-	v	v		

No.	Project Name (country/regional agency)	Thematic Areas			
		Enterprise Development &Trade Facilitation	Technology Development & Transfer	Enabling Environment	Food Security & Sustainable Development
	wide pest management systems for horticultural crops in the Caribbean				
43	Support for hot pepper production, marketing and trade		v		
44	Regional small ruminant production, marketing and trade project	v	v		
45	Promotion of improved crop production technologies to enhance competitiveness		v		
46	Inclusive rural finance for competitive agribusiness			v	
47	Developing an Effective and Efficient Marketing System for the OECS	v		v	
48	Improving Agricultural Health and Food Safety Systems (AHFS) in the OECS				v
49	Improving the Availability, Quality, and Management Systems for Water in Agriculture				v
50	Mitigating the Long Term Effects of Natural and Man Made Hazards on Agriculture Production				v
51	Assisting in the Development of Land Use Planning and Agricultural Diversification				v
52	Developing clusters in the agribusiness industry	v		v	
53	Creating a competitive anthurium industry	v		v	

Source: CARICOM Secretariat Website: url: http://caricom.org/jsp/community/donor_conference_agriculture/moving_agri_forward_proposals.pdf

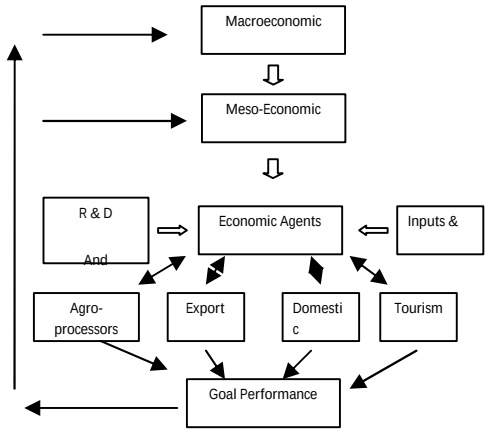

Figure 1: Schematic for Policy Influences on Agricultural Decision Making Entities