



THE POTENTIAL ROLE OF THE CARIBBEAN DIASPORA IN SCIENCE, TECHNOLOGY AND INDUSTRIAL POLICY

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Abstract: This paper addresses the key guiding questions of the International Development Research Centre (IDRC) project¹ assessing strategic opportunities for Caribbean migration from brain circulation: ‘How can source countries exploit the benefits of brain circulation?’, by concentrating on the role of diasporas as conduits of tacit knowledge and technology. This research primarily engages with recent literature on the ‘new’ industrial policy that emphasises the role of the movement of skilled persons and focused, strategic interactions between the government and the private sector. As such, it focuses on the potential benefits of institutional mechanisms of engaging with the diaspora by government and home country private sector as a means of facilitating transformation of the region’s productive sector. The analysis focuses on the diasporic relationship between Jamaica and the United States.

PART I: RESEARCH OVERVIEW

Introduction

The purpose of this paper is to outline the key areas of focus for this on-going research on the role of Caribbean diasporas in science, technology and industrial policy. It addresses the key guiding question of the IDRC project² considering strategic opportunities for Caribbean migration from brain circulation: ‘How can source countries exploit the benefits of brain circulation?’, by focusing on the role of diasporas as conduits of tacit knowledge and technology. This research primarily engages with recent literature on the ‘new’ industrial policy that emphasises the role of the movement of skilled persons and focused, strategic interactions between policymakers, scientists

and technologists in the region and in the diaspora, and the private sector. As such it focuses on the potential benefits of *institutional mechanisms* of engaging with the diaspora by government, the private sector and domestic science and technology community as a means of facilitating transformation of the region’s productive sector.

Caribbean productive sector development

A critical assumption underpinning this proposal and the key challenge facing the region is its narrow and relatively unsophisticated production structure. Countries in the region are heavily reliant on a few goods and services, primarily agricultural or mineral commodities and tourism, and the vast

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majority of these goods and services are of low value-added and technology intensity. Import-substituting manufacturing sectors have been under increasing pressure since the 1980s with increased trade liberalisation while export-oriented sectors have suffered from wider shifts in the global architecture of production that has seen manufacturing increasingly move to Mexico, south-east Asia and most recently, China. This dynamic has contributed to departure from a regional development model with an agricultural and manufacturing base to one that is increasingly reliant on export-oriented services, with potentially negative distributional implications given the skill profile of the regional labor force (Marshall, 2002). Offshore financial services activities, in particular, have been held by regional policymakers to present a ray of hope but have yet to live up to expectations, particularly with most regional activities being of relatively low sophistication and minimal value-added. More recently, the industry has suffered due to changes in international regulations led by the Organisation for Economic Co-operation and Development (OECD) aimed at curtailing offshore tax havens and money laundering, as well as the current financial crisis. This has posed a major challenge for the region in terms of its wider strategies for engagement with a changing global capitalist economy (c.f. Marshall, 2007).

How can the region address these challenges in the productive sector and concomitant problems of rising unemployment, inequality and social disintegration? Where should the focus be as countries struggle to conceptualise a new productive sector strategy? Rodrik and Hausman (2003) argue that the key challenge facing middle income developing countries, particularly those with small economies or narrow production structures such as those in the Caribbean, is learning what products—broadly defined—can be produced competitively. That is,

while in principle there is very large range of products that entrepreneurs and policymakers could focus on, ‘discovering’ which of those products a given country or firm is good at is a highly risky and uncertain process. Standard economic analysis would seek an answer through comparative advantage, e.g., in ‘labour-intensive manufactured goods’, but as Rodrik and Hausman (2003) note, this provides little practical advice as there are thousands of potential products one could choose. A quick glance at the six-digit harmonised schedule (HS), which categorises trade products for customs purpose reveals around 5,000 different commodity groups. How is one to choose? Predictions of international trade models based on factor-endowments turn out to be ‘too coarse to have much operational value’, while management consultants also seem to be of little help (Rodrik and Hausman, 2003). An alternative approach to productive sector development must move beyond static comparative advantage to consider the more product-specific nature of global competition. They, thus, characterise the economic development challenge facing developing countries as one of ‘self-discovery’, where countries are faced with the difficult task of identifying areas of productive potential.

A central element of this approach is ensuring the availability of knowledge and technology to facilitate entry into new areas of productive activity of increasing sophistication. In this view technology is seen as tacit, thus rendering its transfer and absorption subject to high costs as well as significant uncertainty in the local adaptation process (c.f. the work of Richard Nelson, Sanjaya Lall and Larry Westphal). The tacit nature of technology has important implications for its transfer, which is critical for local industrial upgrading, as it can only be acquired through face-to-face interactions. This usually requires the movement of skilled people, which historically has meant

foreign experts but in today's context highlights the potential value of skilled diasporas who combine scientific training and technical skills with local knowledge.

Institutional innovations for industrial development

There are both institutional as well as technical elements of this approach. Rodrik (2004) argues that current approaches to industrial policy are concerned with government and the private sector sharing information about externalities; it is about strategic interactions aimed at addressing obstacles to industrial restructuring and identifying new economic opportunities: 'industrial policy is a discovery process—where firms and the government learn about underlying costs and opportunities and engage in strategic coordination'. In this view, the problem of productive sector development is re-conceptualised as demand rather than supply constrained, an approach which seems to have significant utility in the context of capacity under-utilisation, as reflected in high rates of unemployment and excess physical production capacity across the Caribbean.

Thus while older approaches to industrial policy focused narrowly on the financial requirements of industrial development, more recent considerations pay closer attention to *institutional* interactions between government and private interests, as a means of information sharing geared towards identifying new activities and promoting structural transformation. It recognises that the requirements of economic development—particularly the identification of new areas of activity—are constantly changing in line with a dynamic and complex global economy. It also recognises that connections with the world economy are necessary but insufficient requirements; it is the nature of engagement with the global economy—particularly the quality of search functions

and the structural characteristics of collaboration with other actors that determines success (Sabel, 2009). Ricardo Hausmann, Richard Nelson, Dani Rodrik, Charles Sabel, Ben Ross Schneider, and Joseph Stiglitz are just a few of the scholars from different disciplines that are spearheading theoretical and policy-based developments within this institutional approach.

Critically, this new approach is being taken on board by one of the key international development organisations. The Inter-American Development Bank has recently adopted a research programme aimed at revisiting the role of industrial policy under the term 'productive sector policies'. It is worth noting at this point that in some respect, the role of public–private interactions is nothing new. Government interaction with business is held to be at the core of the success of the East Asian tigers in Alice Amsden and Robert Wade's seminal country studies on Korea and Taiwan. This approach, thus, represents a reconsideration of the key institutional elements of successful East Asian development policy. However, while the re-engagement with industrial policy is a positive development in wider development policy research and practice, industrial policy still retains the intellectual and political baggage from the now sterile state versus market debates of the 1980s and 1990s. It remains to be seen how other powerful development actors within and outside the region this approach will respond to this new approach.

Institutional mechanisms for diasporic engagement

The lack of institutionalised channels of engagement with the private sector is thus a major deficiency of Caribbean industrial policymaking. This becomes especially clear in the context of the existence of a skilled diaspora, as diasporas are a key source of

knowledge that is largely been ignored by regional governments. This is particularly a problematic thing given to the stagnation of the region's productive sectors and economies over the past few decades. In order to re-ignite structural transformation and improve the quality of the region's insertion in the global political economy there needs to be a shift to more knowledge and technology intensive activities. However, the key challenge for all countries in making this shift lies in the difficulties of instituting mechanisms of information exchange to facilitate the identification of new productive activities and the knowledge and technology transfer that can make them competitive. This is where the diaspora is of greatest potential benefit. Historically, the cross-border movement of persons has been a critical factor in the transfer of tacit knowledge and technology necessary for successful industrial development. Historical evidence is drawn from England during the industrial revolution and then from follower countries like United States, Germany, Japan; and later Taiwan, Korea, China and Ireland. Other countries like India with a large highly skilled diaspora have had less success in engaging diaspora through formal policy institutional channels but diasporas have nevertheless played an important informal role, particularly, through networks of high technology entrepreneurs such as Indus Entrepreneurs (TiE).

The role of the diaspora in Taiwan deserves special attention. The key factor in the Taiwanese case was the institutional connections between Taiwanese officials and members of the Taiwanese diaspora, particularly those who studied at American universities and remained to take jobs in the U.S. high-technology sector. Taiwanese officials sought industrial policy advice from members of the highly-skilled Taiwanese diaspora who were resident in the United

States. Tapping the diaspora was a key strategy for facilitating technology transfer and cross-border technological learning. 'Taiwanese officials began traveling to Silicon Valley in the 1960s and 1970s, long before most of the world was aware of its existence. Senior economic ministers studied the Silicon Valley experience and *institutionalised mechanisms for eliciting advice on technology and industrial policy from the region's community of US-educated Taiwanese engineers*' (Saxenian, 2001). Indeed, under the advice of their Silicon Valley based diaspora, Taiwanese policymakers attempted to mimic many other aspects of the Silicon Valley model, including links between industry and public research institutions and the creation of venture capital industry to provide the financial support necessary for an inherently high-risk industry.

Given the need to identify new areas of activity and foster supporting technology transfer why has there been so little effort to engage the diaspora? Certainly, the fact that the vast majority of highly-skilled Caribbean people live outside of their home countries is well known. Table 1 provides a comparative view of global migration flows. It shows that while large countries have the highest number of total skilled migrants, small Caribbean countries have by far the highest migration *rates*. It reveals that five Caribbean countries—Guyana, Jamaica, St. Vincent, Grenada and Haiti have between 80% and 90% of their university-educated citizens living overseas.

Fortunately, there have been some recent attempts to devise a diaspora strategy in the region. The Jamaican government's diaspora conferences and various initiatives conducted in Jamaica and in the United States through its embassies and consulates are the key example. However, while this interest in the diaspora is welcome,

Table I Comparative view of global migration flow

All countries	Highest emigration stocks	All countries	Highest emigration rates (%)
United Kingdom	1,441,300	Guyana	89
Philippines	1,126,300	Grenada	85
India	1,037,600	Jamaica	85
Mexico	923,000	St. Vincent	84
Germany	848,400	Haiti	84
China	816,800	Trinidad and Tobago	79
Korea	652,900	St. Kitts and Nevis	78
Canada	516,500	Samoa	76
Vietnam	506,400	Tonga	75
Poland	449,000	St. Lucia	71
United States	431,300	Cape Verde	68
Italy	408,300	Antigua and Barbuda	67
Cuba	332,700	Belize	66
France	312,500	Dominica	64
Iran	308,800	Barbados	64
Jamaica	291,100	Gambia	63
Hong Kong	290,500	Fiji	62
Russia	289,000	Bahamas	61
Taiwan	275,300	Malta	58
Japan	268,900	Mauritius	56
Netherlands	257,000	Seychelles	56
Ukraine	246,000	Sierra Leone	52
Columbia	233,000	Suriname	48

Source: Adapted from Adams, 2003, Tables 4 and 5

much of the initial desire to engage with the diaspora was narrowly driven by the critical role of the diaspora in providing remittance funds, but does not appear to be linked to any comprehensive industrial or technology policy designed to transform the region's productive structure. A recent and promising exception can be found in a number of new initiatives being spearheaded by the Jamaican Consulate-General of New York involving data collection and the construction of a diaspora database and facilitating institutional links between diaspora

organisations in the United States and business development organisations in Jamaica.

PART II: METHODOLOGY AND PRELIMINARY FINDINGS

Research design and methodology

This research, thus, focuses on the potential role of the Caribbean diaspora in contributing to the development of science and technology intensive activities in the

region. Specifically, it considers the institutional mechanisms necessary to engage the diaspora, particularly scientists and technologists, in a productive manner. It focuses specifically on a single country and sector: biotechnology in Jamaica. Jamaican biotech is chosen because there has been significant effort put into the development of the sector at the policy, research though to a lesser extent industry and private sector levels. Not only has there been a significant policy effort, but also there has been a history of interactions between researchers in Jamaica and those in the diaspora, and also between academic researchers and industries. While selecting a single country and industry case based on might be seen as limiting the variation that might otherwise be gained from a multi-country or industry approach, this choice of research design is justified by the focus on this research on the *process* of diaspora interactions. Recent developments in qualitative and case research methodology have provided theoretical and philosophical justification for this approach (George and Bennett, 2005). Further, comparison with other country cases outside of the Caribbean will provide critical variation for interpreting the results of the research. The latter will, thus, draw upon the experiences of successful country cases such as Taiwan and Ireland which have developed high technology sectors with significant help from their diasporas to identify theoretical and policy based lessons that might be applicable in the Jamaican and wider Caribbean context³.

This research relies on qualitative data collection methods, particularly elite interviews with key figures in the Jamaican, wider Caribbean and diasporic science communities, policymakers and senior managers in private sector industries that can benefit from biotechnology (such as agriculture and food processing). These will be supplemented by analysis of policy documents

and other primary and secondary texts that provide insights into the manner in which members of the Jamaican diaspora have engaged with their counterparts at home.

Preliminary findings

Interviews were conducted with policymakers and University of the West Indies (UWI) scientists in Jamaica during 19–24 April. Even though these are very early discussions in the context of the research a clear pattern began to emerge as to the challenges facing diaspora engagement in biotechnology research in the region. Interview respondents consistently noted that efforts had been made between members of the science community in Jamaica and members of the diaspora to forge collaborative relationships but these had been hindered by the following:

- 1 The lack of an appropriate model or set of institutional arrangements to facilitate dialogue, engagement and collaboration. This was seen as arising as a result of (amongst other things):
 - a A mismatch between diasporic and local researchers' approaches to research;
 - b misunderstandings of incentives/motivations;
 - c lack of an effective strategy; all of which are related to and highlight
 - d weaknesses in Jamaica's innovation system.
- 2 Limited financial and other material resources for supporting collaborative work.

Other critical issues that were pointed out in the interviews concern the extent to which policymakers and the private sector were interested and engaged in developments in the biotechnology sector. In summary, there was an increased interest on the part of the agricultural community much of which was

driven by a renewed focus on the agriculture sector by the government of Jamaica (especially under the leadership of the current Minister). These renewed efforts coincided well with new efforts at UWI to support research in agriculture (including biotechnology). However, there were major questions and concerns about the approach of private industry/the private sector to the science and technology research and development. In general, respondents felt that industry paid inadequate attention to potentially profitable and industry-supporting research that was being conducted in Jamaica. This was attributed to a number of shortcomings on the part of local industry/private sector including:

- 1 short-term time horizons;
- 2 conservatism among the private sector/capitalist class;
- 3 the extent to which the local private sector was dominated by a traders focus on 'buying and selling' rather than a capitalist focus investing in productive activity;
- 4 lack of knowledge about local research activities and their potential commercial applications and benefits;
- 5 lack of confidence in the value of the local research (e.g., when in need of solutions to technical challenges major firms were more likely to tap technical skills/science research in Canada than in Jamaica); again, many of these issues were (or could be) attributed to;
- 6 weaknesses in Jamaica's innovation system.

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NOTES

¹ IDRC Project 105228: *Strategic Opportunities for Caribbean Migration: Brain Circulation and Diasporic Tourism and Investment*, being undertaken by the Shridath Ramphal Centre for International Law, Trade Policy and Services, University of the West Indies, in partnership with the Canadian-based Centre for Trade Policy and Law, University of Carleton.

² IDRC Project 105228: *Strategic Opportunities for Caribbean Migration: Brain Circulation and Diasporic Tourism and Investment*, being undertaken by the Shridath Ramphal Centre for International Law, Trade Policy and Services, University of the West Indies, in partnership with the Canadian-based Centre for Trade Policy and Law, University of Carleton.

³ Finally, while most research on the potential role of diasporas has overwhelmingly assumed positive benefits of diasporic engagement, the research is also cognizant of critiques of diaspora approaches, such as that put forward by Obukhova (2009) suggesting that brain circulation may have some detrimental effects

on organisational performance by receiving (source country) firms. This heightens the need for careful and open analysis of the institutional mechanisms/dimensions of brain circulation and the range of social, economic and political effects they can have on the home country.