CBB Working Paper 2010-…..

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BY

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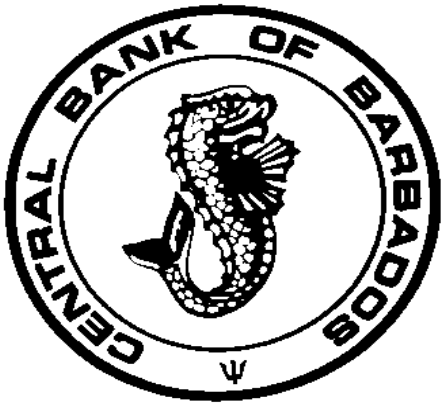

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Investigating the Competitiveness of Agri-Food Industries in the OECS Sub-Region

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ABSTRACT

This paper assesses the competitiveness of agri-food industries in the Organisation of Eastern Caribbean States (OECS) vis-à-vis the EU in light of the current shift in trade dynamics, including the recently-signed Economic Partnership Agreement (EPA) with the EU. Using several measures of revealed comparative advantage at both the two and four-digit levels, we find that there are similarities in specialisation in broad agricultural product groups in the sub-region, but notable differences at more disaggregated levels. The variation in comparative advantages across the OECS suggests that countries with uncompetitive industries in the sub-region are essentially competing with their more highly specialised regional counterparts for market share within the EU. The findings suggest that countries in the OECS should aim to direct resources toward the most competitive industries to ensure that they remain buoyant in the face of increasing competition for the European market.

JEL classification: F14, F15

Keywords: Competitiveness, Revealed Comparative Advantage, OECS, EU

INTRODUCTION

The current phase of trade liberalisation and the accompanying increase in competition among exporters is of particular relevance for the small, developing economies in the Caribbean as it represents a paradigm shift from the uni-directional preferential arrangements many of them have enjoyed for decades, toward a system of reciprocity and competition.

Under the World Trade Organisation (WTO) General System of Preferences (GSP) as well as through developmental arrangements such as LOMÉ, the Caribbean Basin Economic Recovery Act (CBERA) and CaribCan, the region has been afforded non-reciprocal preferential treatment for many of its exports since the 1970's. Up to 2007, non-Least Developed Countries (LDC) African Caribbean and Pacific (ACP) countries, which include the Organisation of Eastern Caribbean States (OECS)[1] member states, benefitted from duty-free access for 87.9% of their agricultural products into the EU. However, the erosion of these preferences, in particular the phasing out of major agricultural commodity protocols and the reduction in EU tariffs on

[1]There are 8 full members of the OECS: Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, St. Kitts and Nevis, St. Lucia, and St. Vincent and Grenadines; and the British Virgin Islands is an associate member.

imports from non-ACP countries will challenge exporters in the region who will now be exposed to strong competition from other jurisdictions. This is of particular relevance for the small, open economies of OECS which are highly dependent on the foreign exchange earnings from agricultural food exports. Thus, identifying the most competitive industries and countries will be critical to understanding which may be more exposed to the impacts of these changes and, perhaps equally importantly, which are most capable of responding.

This paper will attempt to answer these questions, employing a series of indices founded on the Ricardian-based theory of comparative trade advantage and will proceed as follows. Section 2 will provide a brief overview of the contemporary trade relationship between the EU and the OECS territories as well as a synopsis of the relevant studies into trade specialisation and comparative advantage in the Caribbean. Section 3 will briefly describe the methodology employed in the paper. Section 4 provides the results. Section 5 will offer some concluding remarks and highlights the policy implications of our findings.

EU-OECS TRADE

As a major trading partner of the OECS region, the EU is one of the leading markets for the region's exports of agricultural produce. From 2000-2006, OECS exports to the EU averaged USD$83 million, of which roughly 28% were agricultural products. For some countries, this ratio is significantly higher. While exports of food and live animals only accounted for 11% of St. Vincent-EU trade, they accounted for over 70% of total exports to the EU from St. Lucia, Grenada and St. Kitts.

Despite the importance of trade with the EU, the value of food and animal product exports entering the Union from the OECS – both in terms of volume and as a percentage of total exports – has declined since 2000 (Figure 1).

EU-CARICOM trade has been directed by a series of agreements which provide tariff-free access for OECS goods entering the EU. Specifically, the WTO GSP allows for the region to be granted preferential treatment under the Most Favoured Nation (MFN) provisions. Through a series of legal waivers, a network of non-reciprocal preferences also allowed tariff-free access for most of CARICOM's goods entering the EU market and these had been maintained under successive WTO trade rounds of Lomé I through IV (1976-2000) and their successor, the Cotonou Agreement (2000-2007).

In addition to these agreements, a number of commodity protocols provide further preferential treatment in the form of guaranteed volumes and prices, particularly for bananas and sugar. Not only do these arrangements provide broad coverage, but the rate of utilisation—the extent to which countries export under the preferential regime—is generally high (Bureau et al., 2006).

These protocols have progressively been eroded by two concurrent changes in the international trade regime. First, the proliferation of multilateral free trade arrangements such as the recently signed Economic Partnership Agreements (EPAs) between the EU and CARIFORUM[2]—CARICOM countries (excluding Haiti and Montserrat) along with the Dominican Republic—that established a comprehensive framework for reciprocal trade relations and represented a shift away from unidirectional trade preferences toward reciprocity. The EPA requires CARIFORUM, *inter alia,* to open its respective markets through a 25-year phased tariff

[2] CARIFORUM is CARICOM countries (excluding Haiti and Montserrat) along with the Dominican Republic.

reduction to imports from the EU. A meta-analysis by the Overseas Development Institute (2006) notes that based on both general and partial equilibrium modelling, the potential impact of these changes is anticipated to be mixed, as net trade creation in favour of more efficient producers within the region appears to be dependent on the degree of simultaneous tariff cuts.

Second, the increase in the incidence of legal challenges[3] to existing arrangements is likely to result in increased competition for the EU and other markets from lower cost producers. This further underscores the need to identify the most competitive industries and territories within CARICOM and the OECS, as small-island economies are expected to be most impacted by changes to these protocols (Milner et al., 2009).

However, while both the EPA and changing global trade dynamics present challenges, in the form of reduced preferences and additional competition, they also create new opportunities, as the scope for the most efficient producers to increase their penetration of the EU market is improved. In order for countries to benefit most from the opportunities presented via these new arrangements, it is critical that they are able to identify territories and commodities in which they are most competitive.

Surprisingly, there has been limited research in this area. In fact, despite the importance of export earnings to the region, there remains a paucity of research into trade specialisation within the Caribbean generally, and the OECS in particular. Most early research was directed toward examining trade flows and, as a result, less empirical reference was made to country-level competitiveness and specialisation (see Ramsaran, 1993; McIntyre, 1995).

A few contemporary studies have also evaluated sectoral and national competitiveness. Lewis and Webster (2001), for instance, conducted country-level factor content analysis to explain the production and export dynamics of a number of Caribbean countries and found that within the region, there are significant differences in the export specialisation patterns between countries, but notable similarities when countries are compared to regional averages.

Employing diversification indices for the period 1961-2000, Taylor and Francis (2003) find that while there has been some level of diversification among Latin American and Caribbean countries, for many of these countries, particularly from the OECS, there has been a marginal level of diversification and these countries remained rather specialised.

In a comprehensive review of Trinidad during the period 1991-2005 and using the original and modified permutations of the Balassa Index (BI), Hosein (2008) found that Trinidad had a comparative advantage in the exportation of hydrocarbon commodities when compared with the rest of the world and that this advantage was relatively constant over time. Using several measures of revealed comparative advantage (RCA), Lorde et al. (2010) found that not only did Barbados have stable comparative advantages in *Live Animals*; *Raw Sugars, Beet and Cane*; and *Spirits*; the competitiveness of the latter commodities were very stable over time. They also concluded that additional export opportunities existed in a variety of other commodity groups.

Despite these studies, there appears to be no research that focuses exclusively on the OECS and their export specialisation and competitiveness with the EU. Given the perceived vulnerability of the small, open economies of the OECS to fluctuations in trade patterns and their dependence on foreign exchange earnings from exports, it is critical that their advantages are identified and exploited. As such, the current research will provide a useful indicator of the sources of trade advantage in the OECS sub-region vis-à-vis the EU and will offer policymakers a useful tool for determining the most efficient allocation of resources across the region.

[3] For an example of this, see McQueen et al. (2007).

METHODOLOGY AND DATA

To analyse the competitiveness of commodities from the OECS, we employ the empirical model of revealed comparative advantage (RCA) which was proposed by Balassa (1965, 1979) and is one of the most widely used benchmarks of domestic exporter competitiveness (De Benedictis and Tamberi, 2001). More specifically, this paper will employ the Balassa Index and two of its variants to determine in which commodities OECS have a competitive advantage vis-à-vis the EU, in which countries those advantages lie.

Comparative advantage in the BI is inferred by observing the extent to which a country's exports of a given product, relative to its total exports, compares to a similar ratio constructed using a single territory or group of reference territories. The Balassa Index therefore points to a "revealed" comparative advantage or "revealed" export advantage (RXA) and is calculated as:

$$RCA_{ij}^{1} = RXA = \frac{X_{ij} / \sum_{j=1}^{J} X_{ij}}{\sum_{n=1}^{N} X_{nj} / \sum_{n=1}^{N} \sum_{j=1}^{J} X_{nj}} \tag{1}$$

where X_{ij} is country *i*'s export value of commodity *j*; $\sum_{j=1}^{J} X_{ij}$ is the total export value of country *i*; $\sum_{n=1}^{N} X_{nj}$ is the export value of commodity *j* for a set of *N* reference countries; $\sum_{n=1}^{N} \sum_{j=1}^{J} X_{nj}$ is the export value of all commodities for a set of *N* reference countries; and RCA_{ij}^{1} is the revealed comparative advantage of country *i* in commodity *j*. The values generated by Equation (1) can be subject to binary interpretation such that when RCA_{ij}^{1} is greater than 1, it indicates that country *i* has a comparative advantage in the export of commodity *j* in the market of a set of reference countries; while RCA_{ij}^{1} less than 1 indicates the country possesses a comparative disadvantage.

Despite its usefulness, there are a number of empirical issues which must be considered when employing this measure of comparative advantage. The first of this is, as Greenaway and Milner (1993) suggest, the measure is biased from the perspective that it fails to account for imports and, as such, implies possible over or underestimation of any underlying comparative advantage or disadvantage. The second permutation of the RCA takes account of imports by calculating the original index based on net exports, rather than total exports. By including imports, this index provides a useful indicator of comparative advantage with respect to total trade flows. This variant is represented as:

$$RCA_{ij}^{2} = \frac{X_{ij} - M_{ij}}{X_{ij} + M_{ij}} \tag{2}$$

where X_{ij} and M_{ij} are country *i*'s export and import values of commodity *j* to the world or a set of reference countries respectively. RCA_{ij}^{2} ranges in value from –1 to 1 where values greater/less than 0 are indicative of comparative advantage/disadvantage with respect to that commodity (or commodity group).

The final index to be employed in the current study follows Vollrath (1991) who proposed alternative methodologies for capturing the import component of trade flows. One of the most widely used of this is the Vollrath index based on the difference between the revealed export advantage (RXA)[4] and the revealed import advantage (RMA), with notation as follows:

$$RCA^{3}_{ij} = RTA = RXA - RMA = \frac{X_{ij} / \sum_{j} X_{ij}}{\sum_{i} X_{ij} / \sum_{i}\sum_{j} X_{ij}} - \frac{M_{ij} / \sum_{j} M_{ij}}{\sum_{i} M_{ij} / \sum_{i}\sum_{j} M_{ij}} \quad (3)$$

where variables are as defined in Equations (1) and (2). In this measure, positive values indicate comparative advantage. Vollrath (1991) also proposed additional measures of revealed comparative, that is, the *ln* measures—ln (RXA) and ln(RXA) – ln(RMA)—which were designed to address the asymmetry of the Balassa Index (RXA). However, these have been challenged on the ground that the forced symmetry imposed by the log transformation may obscure the underlying dynamics of the Balassa Index and actually bias the resultant analysis. Consequently, the *ln* measures will not be considered in the current research.

Given that varying indices will produce different (even conflicting) results of revealed comparative advantage (Lorde et al., 2010) we follow Ballance et al. (1987) and conduct a series of consistency tests to determine how the computed indices perform as ordinal, cardinal and dichotomous measures. To test whether the ordinal measures provide consistent ranking of comparative advantage, Ballance et al. (ibid) suggest the use of rank correlation coefficients where cross-country pairs of indices are used. The authors then propose a similar approach for testing the consistency of the cardinal measure, simply by employing pair-wise correlation coefficients. The final test of the indices as dichotomous measures is determined by the proportion of commodity groups in which both paired indices have comparative advantages/disadvantages. In all of these tests, values close to unity suggest that the measures are consistent.

(Why only five of the eight OECS states were used) Export data for the agri-food sector were sourced from the United Nations (UN) Comtrade database for the period 2000-2006 at both the two- and four-digit levels, the former to provide some generalisable comparisons and the latter to more clearly analyse the underlying product groups responsible for the identified instances of comparative advantage/disadvantage. The RCA indices are calculated against the EU-15 as the comparator.

RESULTS AND DISCUSSION

Following De Benedictis and Tamberi (2001), the calculated indices are compared at the cross-industry and cross-country levels. Regarding the former, the OECS sub-region exhibits a comparative advantage vis-à-vis the EU market primarily in the *Vegetables and Fruit*; and *Coffee, Tea, Cocoa and Spices* export categories. Apart from these goods, Dominica and Grenada also exhibit comparative advantages in *Miscellaneous Edible Products* and *Fish, Crustaceans and Molluscs* respectively.

However, on inspection, the indices appear to produce mixed indications of which goods are the most competitive in the region. For example, while all three indices provide similar

[4] This is identical to the original Balassa Index.

average results for Dominica (that is, they all suggest comparative advantage in *Vegetables and Fruit*; and *Coffee, Tea, Cocoa and Spices*; and *Miscellaneous Edible Products*) RCA_{ij}^{1} and RCA_{ij}^{2} provide differing results for St. Vincent and the Grenadines, St. Kitts and Nevis and St. Lucia.

Thus, it is necessary to examine the consistency of these indices. Following Ballance et al.'s (ibid) three-stage methodology, we examine the consistency of these indices as cardinal, ordinal and dichotomous measures more closely. First, Pearson pairwise correlation coefficients are calculated to determine the consistency of the indices as cardinal measures of comparative advantage. In line with Lorde et al. (2010), an observed coefficient above 70% is regarded as a sufficient condition for accepting that two indices produce consistent results. Over the seven-year period, only 11 of the 21 calculated correlation coefficients met this criterion, pointing to weak consistency among the three RCA measures used. However, all of the pairwise correlations between RCA_{ij}^{1} and RCA_{ij}^{3} were above 90%, suggesting that there is notable consistency with the results generated by these two particular measures. This is not surprising since RCA_{ij}^{3} is essentially a variant of RCA_{ij}^{1} that takes account of the import component of trade flows.

The Spearman rank correlation coefficients for the pairs of indices over the period suggest that the three RCA indices are even less consistent as ordinal measures, since less than 30% of those correlations met the 70% criterion. Results from the dichotomous test revealed that over 70% of the indices were significantly correlated. In summary, the results suggest that there is weak consistency among the indices with respect to ranking comparative advantage, but that they are relatively consistent in providing a binary measure of comparative advantage/disadvantage. These results are similar to those reported by Lorde et al. (2010) who calculated five different permutations of the RCA index and found that in general, RCA measures were less consistent in ranking comparative advantage than in providing the binary-type measure.

As noted previously, the RCA indices in Tables 1-3 were constructed employing SITC data at the two-digit level. Given this level of aggregation, there is an increased likelihood of bias within the RCA_{ij}^{1}, since the performance of underlying sub-categories may over- or understate the performance of the broad sector (Vollrath, 1991). Furthermore, it is important to consider the commodity protocols, particularly sugar and banana arrangements, which exist in the region and may influence the finding of comparative advantage at higher levels of aggregation.

To address these issues, we calculate RCA indices at the four-digit level for the categories which showed revealed comparative advantage at the two-digit level. Since this procedure was implemented to determine the possible impact preferences have on export dynamics, only the original Balassa Index (RCA_{ij}^{1}) was employed in this instance.

The four-digit indices (see Table 4, only selected categories are shown due to space constraints) indicated that, as expected, within the *Fruits and Vegetables* category in which the region holds a broad comparative advantage, bananas appear to have the largest advantage, with average RCA indices greater than 1000 in St. Vincent and the Grenadines, St. Lucia and Dominica. With respect to the RCAs in *Coffee, Tea Cocoa, Spices* and *Miscellaneous Edible Products* at the two-digit level, the corresponding four-digit indices reveal that the underlying RCA exists primarily in the *Spices, ex. Pepper and Pimento* (St. Vincent and the Grenadines, Dominica, Grenada and St. Lucia) sub-category. The four-digit indices also indicate regional

comparative advantages in *Vegetable Products, Roots and Tubers* (St. Vincent and the Grenadines and Dominica).

Among the countries, Dominica appears to display a comparative advantage in the largest number of sub-categories, with average revealed advantages for the period in 15 commodity groups, followed by St Vincent and Grenadines (10), Grenada (7), St. Kitts and Nevis (7) and St. Lucia (6).

The comparisons at the cross-country level reveal that each of the five territories has unique comparative advantages. In the case of Dominica, after bananas, the next greatest average comparative advantage over the period lie in the *Vegetable Products, Roots and Tubers* sub-category followed by the *Other Citrus, Fresh, Dried* product group while significant, but less pronounced comparative advantages also existed in *Sauce, Seasoning, Condiments* and *Spices, excluding Pepper, Pimento* groups. St. Vincent's greatest advantage lies in banana exports, followed by *Vegetable Products, Roots and Tubers* and relatively modest advantages in *Rice, Milled, Semi-milled, Crustaceans other than Frozen* and *Rice, husked but not further prepared*. Grenada's major advantages exist in the exports of *Spices, excluding Pepper, Pimento* and *Fish, Fresh, Chilled, Whole products*. When compared to the EU, Saint Kitts and Nevis' major export advantage is in *Sugars, Beet or Cane, Raw* followed by a much smaller advantage in *Frozen Crustaceans.*

Finally, comparing industries across countries revealed that while four of the five countries displayed comparative advantage in banana exports vis-à-vis the EU-15, St. Lucia had the largest advantage, followed by St. Vincent, Dominica and Grenada, respectively. The countries also appear to share a comparative advantage in *Spices, excluding Pepper, Pimento* exports, with Grenada holding by far the largest advantage, followed by Dominica, St. Vincent and the Grenadines and St. Lucia. Comparative advantage also exists in *Fruit, Fresh, Dried*, in three countries and is strongest in Dominica. Finally, Grenada is revealed to have the strongest advantage among the territories in seafood exports, with strong advantages in F*ish, Fresh, Chilled, Whole* and *Fish, Frozen excluding Fillets* categories. Both Dominica and St. Vincent display RCAs in *Vegetable Products, Roots and Tubers* with the stronger advantage in the former country. Interestingly, despite the existence of preferential arrangements for sugar under the Sugar Protocol, only one country – St. Kitts & Nevis – has a comparative advantage in exporting sugar.

These variations at the four-digit level appear to confirm the problem put forward by Vollrath regarding the use of highly aggregated indices for calculating comparative advantage. The RCA_{ij}^{1} indices based on the two-digit vegetables and fruit category, for example, indicated some degree of comparative advantage in all of the sample countries except St. Kitts and Nevis, while the corresponding four-digit indices revealed that the advantage was restricted to, at most, 10 of the 24 sub-categories as in the case of Dominica, just four in St Vincent and Grenadines and two each in Grenada and St. Lucia, respectively. As such, it appears to be more useful to employ less aggregated data when examining specialisation since cumulative data belies the underlying dynamics of the indices.

POLICY IMPLICATIONS AND CONCLUSION

The preceding study computed revealed comparative advantage for agri-food industries within the OECS sub-region vis-à-vis the EU-15 at both the two and four-digit levels and found that there are similarities in specialisation in major product groups, but notable variation at more

dis-aggregated levels. These findings provide support for previous research (See Lewis and Webster, 2001), indicating that while there are some similarities in advantages across member states, the degree of specialisation and the extent of competitiveness vary between countries and industries. In essence, the variation in comparative advantages across countries in the OECS suggests that some countries are significantly less competitive in certain agri-food exports than others in the sub-region and are essentially competing with these more competitive sub-regional counterparts for market share within the EU. Thus, the results of this research have implications for OECS countries and specific industries that are both competitive and uncompetitive.

Arguably for the former, countries which display sizeable comparative advantages in specific industries (such as Grenada holds in *Spices, excluding Pepper, Pimento* exports) *vis-à-vis* the EU, should not only continue to produce and promote these products to Europe but, perhaps more importantly, as they face increased competition for the EU market, these countries will have to proactively strengthen and enhance these industries. This will require clearly identifying the factors responsible for the revealed comparative advantages and thus highlights the need for further research in this area. Given the relative usefulness of using disaggregated data, there is also a need for further research (perhaps at the six-digit levels) to identify even more clearly those specific commodities in which countries are most competitive.

At the same time, those countries which were revealed to be uncompetitive in specific industries will face increasingly intense challenges to sustain employment and profitability in those industries. This is of particular relevance for those countries which export goods under additional preferential arrangements (such as the Banana and Sugar Protocols) but which remain uncompetitive in those industries, as they are at even greater risk as these preferences are phased out. As such, policymakers must consider finding new ways to improve efficiencies in those industries or finding niche markets for their products. Conversely, given the limited resources within the region, it may be more efficient for countries to redirect their resources toward maintaining and strengthening those industries in which they have the strongest comparative advantages in the region and away from their uncompetitive industries.

However, these decisions are particularly complex in the OECS sub-region since, despite some contractions in the contribution of agricultural exports to the EU to total EU exports, there is still a relative dependence on these industries for employment and foreign exchange earnings. This means that there will be significant financial and social costs associated with any adjustments to the agricultural sectors across the region. Therefore, it is critical that developmental and technical support, such as the transitional component of the CARIFORUM-EU EPA and the developmental support, to which the EU has committed, be prioritised to ensure that OECS territories are not left worse off by the new trading arrangements.

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Figure 1: OECS Trade Patterns with the EU

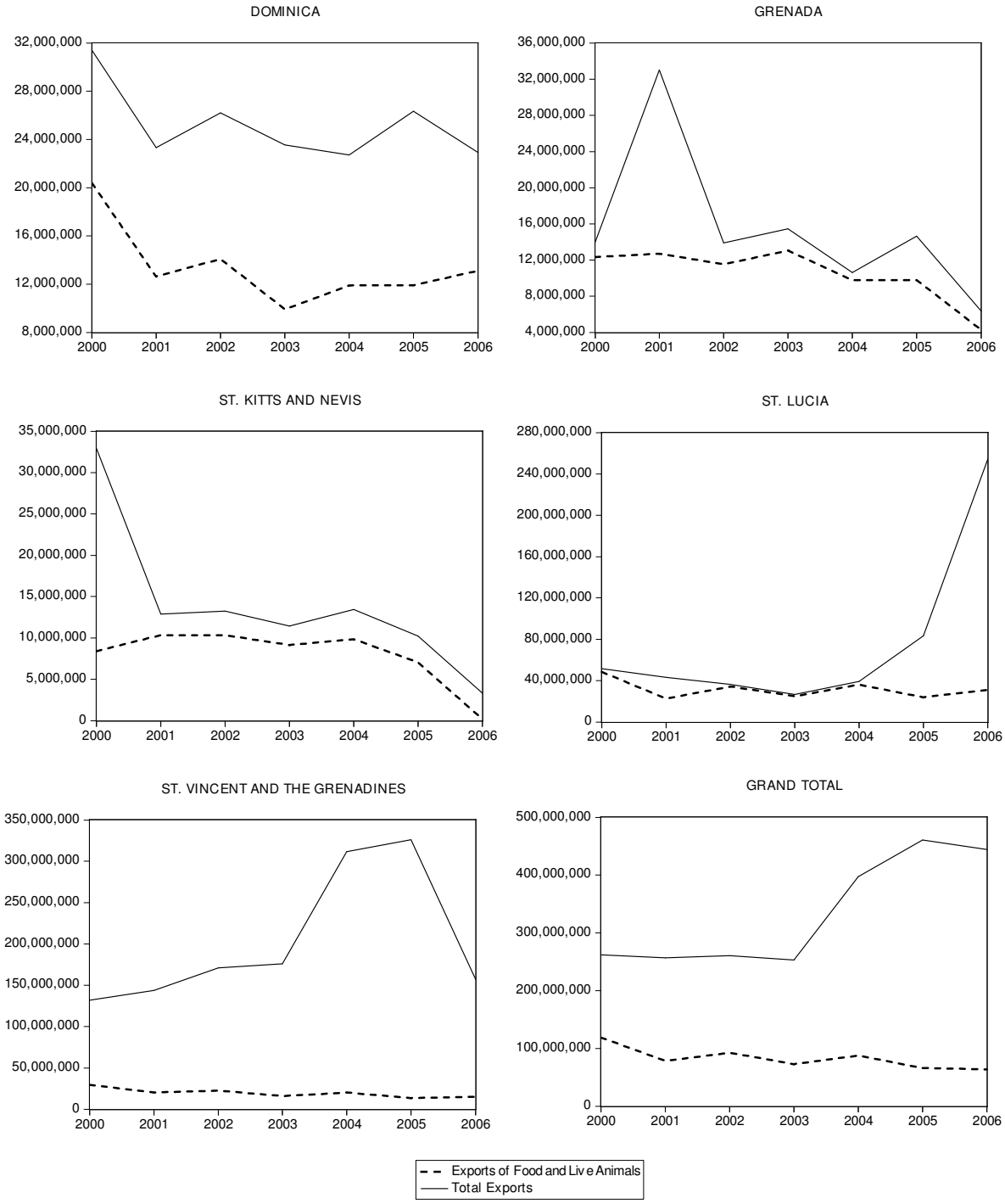

Table 1: *RCA*[1]

Commodity	2000	2001	2002	2003	2004	2005	2006
Dominica							
Live Animals	0.01	0.00	0.00	0.00	0.00	0.00	0.01
Meat, Meat Preprtns.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dairy Products, Bird Eggs	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fish, Crustaceans, Mollusc	0.00	0.01	0.03	0.00	0.00	0.00	0.00
Cereals, Cereal Preprtns.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vegetables and Fruit	**55.49**	**53.33**	**47.09**	**55.76**	**54.37**	**58.16**	**55.49**
Sugar, Sugar Preprtns., Honey	0.00	0.00	0.01	0.03	0.06	0.01	0.00
Coffee, Tea, Cocoa, Spices	**2.50**	**1.98**	**1.86**	**1.24**	**1.47**	**1.49**	**2.50**
Animal Feed Stuff	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Misc. Edible Products etc.	**14.98**	**23.77**	**17.80**	**7.78**	**5.88**	**9.70**	**14.98**
Grenada							
Live Animals	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Meat, Meat Preprtns.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dairy Products, Bird Eggs	0.04	0.00	0.00	0.00	0.00	0.00	0.00
Fish, Crustaceans, Mollusc	**3.17**	**3.05**	**11.88**	**3.98**	**17.95**	**34.77**	**51.34**
Cereals, Cereal Preprtns.	0.06	0.00	0.00	0.11	0.00	0.29	0.00
Vegetables and Fruit	0.98	0.76	**1.35**	**1.15**	**1.66**	0.13	**2.20**
Sugar, Sugar Preprtns., Honey	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coffee, Tea, Cocoa, Spices	**103.04**	**139.84**	**190.92**	**145.63**	**172.98**	**173.21**	**144.00**
Animal Feed Stuff	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Misc. Edible Products etc.	0.00	0.01	0.01	0.25	0.15	0.00	0.05
St. Kitts and Nevis							
Live Animals	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Meat, Meat Preprtns.	0.03	0.00	0.00	0.00	0.00	0.00	0.03
Dairy Products, Bird Eggs	0.13	0.24	0.12	0.08	0.27	0.00	0.13
Fish, Crustaceans, Mollusc	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Cereals, Cereal Preprtns.	0.04	0.03	0.75	0.50	**9.97**	**17.60**	0.04
Vegetables and Fruit	0.02	0.00	0.03	0.00	0.00	0.82	0.02
Sugar, Sugar Preprtns., Honey	0.24	0.04	0.00	0.14	0.00	0.00	0.24
Coffee, Tea, Cocoa, Spices	**210.03**	**217.64**	**187.92**	**204.53**	0.00	0.00	**210.03**
Animal Feed Stuff	0.00	0.00	0.00	0.00	0.00	**4.87**	0.00
Misc. Edible Products etc.	0.19	0.14	0.19	0.01	0.00	**1.28**	0.19
St. Lucia							
Live Animals	0.00	0.00	0.02	0.00	0.01	0.02	0.00
Meat, Meat Preprtns.	0.00	0.10	0.00	0.00	0.00	0.00	0.00
Dairy Products, Bird Eggs	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fish, Crustaceans, Mollusc	0.00	0.13	0.00	0.00	0.00	0.00	0.00
Cereals, Cereal Preprtns.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vegetables and Fruit	**69.68**	**61.77**	**52.77**	**63.72**	**65.48**	**62.74**	**69.68**
Sugar, Sugar Preprtns., Honey	0.00	0.00	0.03	0.00	0.01	0.00	0.00
Coffee, Tea, Cocoa, Spices	0.20	0.77	0.64	0.57	0.37	0.53	0.20
Animal Feed Stuff	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Misc. Edible Products etc.	0.86	0.62	0.77	0.96	0.99	**1.59**	0.86
St. Vincent and the Grenadines							
Live Animals	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Meat, Meat Preprtns.	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dairy Products, Bird Eggs	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fish, Crustaceans, Mollusc	**2.16**	0.00	**2.17**	0.14	0.00	0.00	**2.16**
Cereals, Cereal Preprtns.	**1.72**	**1.14**	**1.35**	0.76	0.82	**1.05**	**1.72**
Vegetables and Fruit	**56.02**	**68.23**	**65.17**	**71.41**	**73.44**	**73.23**	**56.02**
Sugar, Sugar Preprtns., Honey	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coffee, Tea, Cocoa, Spices	0.19	0.30	0.46	0.15	**1.13**	0.28	0.19
Animal Feed Stuff	0.00	0.00	0.02	0.00	0.00	0.00	0.00
Misc. Edible Products etc.	0.01	0.01	0.01	0.00	0.01	0.01	0.01

Note: Revealed comparative advantages are highlighted in bold.

Table 2: *RCA*[2]

Commodity	2000	2001	2002	2003	2004	2005	2006
Dominica							
Live Animals	-1.00	**1.00**	-1.00	-1.00	-1.00	-1.00	-1.00
Meat, Meat Preprtns.	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Dairy Products, Bird Eggs	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Fish, Crustaceans, Mollusc	-1.00	-1.00	-0.99	-0.97	-1.00	-1.00	-1.00
Cereals, Cereal Preprtns.	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Vegetables and Fruit	**0.93**	**0.89**	**0.89**	**0.85**	**0.90**	**0.88**	**0.84**
Sugar, Sugar Preprtns., Honey	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Coffee, Tea, Cocoa, Spices	-0.11	**0.26**	**0.26**	**0.51**	**0.10**	**0.54**	**0.42**
Animal Feed Stuff	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Misc. Edible Products etc.	**0.70**	**0.74**	**0.82**	**0.69**	**0.41**	**0.51**	**0.48**
Grenada							
Live Animals	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Meat, Meat Preprtns.	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Dairy Products, Bird Eggs	-0.99	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Fish, Crustaceans, Mollusc	**0.06**	**-0.13**	**-0.46**	**0.25**	**0.74**	**0.82**	**0.76**
Cereals, Cereal Preprtns.	-0.96	-1.00	-1.00	-0.97	-1.00	-0.96	-1.00
Vegetables and Fruit	-0.42	-0.61	-0.31	-0.65	-0.52	-0.98	-0.88
Sugar, Sugar Preprtns., Honey	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Coffee, Tea, Cocoa, Spices	**0.90**	**0.98**	**0.85**	**0.97**	**0.98**	**0.95**	**0.80**
Animal Feed Stuff	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Misc. Edible Products etc.	-1.00	-1.00	-1.00	-0.91	-0.95	-1.00	-1.00
St. Kitts and Nevis							
Live Animals	**0.65**	**0.70**	-1.00	-1.00	-1.00	-1.00	-1.00
Meat, Meat Preprtns.	-0.94	-0.99	-0.97	-0.99	-0.99	-1.00	-1.00
Dairy Products, Bird Eggs	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Fish, Crustaceans, Mollusc	-0.88	-0.97	-0.94	**0.01**	-0.16	**0.28**	**0.63**
Cereals, Cereal Preprtns.	-0.99	-0.99	-1.00	-0.98	-1.00	-1.00	-0.92
Vegetables and Fruit	-1.00	-0.98	-1.00	-1.00	-0.98	-1.00	-1.00
Sugar, Sugar Preprtns., Honey	**0.80**	**0.85**	**0.90**	**0.86**	**0.87**	-1.00	-1.00
Coffee, Tea, Cocoa, Spices	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-0.66
Animal Feed Stuff	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Misc. Edible Products etc.	-0.94	-0.97	-0.96	-0.96	-1.00	-1.00	-0.97
St. Lucia							
Live Animals	-1.00	-1.00	-1.00	1.00	-0.64	-0.41	**0.28**
Meat, Meat Preprtns.	-1.00	-1.00	-0.98	-1.00	-1.00	-1.00	-1.00
Dairy Products, Bird Eggs	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Fish, Crustaceans, Mollusc	-1.00	-1.00	-0.97	-1.00	-1.00	-1.00	-1.00
Cereals, Cereal Preprtns.	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Vegetables and Fruit	**0.89**	**0.90**	**0.87**	**0.81**	**0.90**	**0.86**	**0.83**
Sugar, Sugar Preprtns., Honey	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Coffee, Tea, Cocoa, Spices	-0.99	-0.90	-0.53	-0.67	-0.68	-0.86	-0.73
Animal Feed Stuff	-1.00	-1.00	-1.00	-1.00	-0.91	-1.00	-1.00
Misc. Edible Products etc.	-0.80	-0.79	-0.88	-0.82	-0.74	-0.87	-0.74
St. Vincent and the Grenadines							
Live Animals	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Meat, Meat Preprtns.	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Dairy Products, Bird Eggs	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Fish, Crustaceans, Mollusc	**0.27**	-0.20	-1.00	-0.02	-0.89	-1.00	-1.00
Cereals, Cereal Preprtns.	-0.57	-0.26	-0.52	-0.58	-0.77	-0.80	-0.81
Vegetables and Fruit	**0.95**	**0.93**	**0.93**	**0.91**	**0.92**	**0.89**	**0.86**
Sugar, Sugar Preprtns., Honey	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00
Coffee, Tea, Cocoa, Spices	-0.31	-0.82	-0.57	-0.51	-0.83	-0.34	-0.78
Animal Feed Stuff	-1.00	-1.00	-1.00	-0.97	-1.00	-1.00	-1.00
Misc. Edible Products etc.	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00	-1.00

Note: Revealed comparative advantages are highlighted in bold.

Table 3: *RCA*[3]

Commodity	2000	2001	2002	2003	2004	2005	2006
Dominica							
Live Animals	0.00	**0.01**	-0.01	-0.01	0.00	-0.01	0.00
Meat, Meat Preprtns.	-3.67	-2.82	-5.94	-5.30	-5.73	-5.56	-5.12
Dairy Products, Bird Eggs	-14.99	-11.59	-13.75	-14.90	-10.93	-11.74	-15.26
Fish, Crustaceans, Mollusc	-2.87	-1.38	-1.48	-0.48	-0.51	-0.75	-0.77
Cereals, Cereal Preprtns.	-2.97	-1.94	-2.71	-1.90	-2.23	-2.43	-3.30
Vegetables and Fruit	**58.65**	**53.94**	**51.43**	**45.32**	**54.53**	**52.92**	**56.00**
Sugar, Sugar Preprtns., Honey	-15.95	-13.51	-13.91	-13.77	-9.88	-13.39	-10.63
Coffee, Tea, Cocoa, Spices	**0.42**	**1.83**	**1.33**	**1.60**	**0.80**	**1.29**	**1.22**
Animal Feed Stuff	0.00	-0.10	-0.04	-0.02	-0.02	0.00	0.00
Misc. Edible Products etc.	**13.98**	**13.16**	**21.41**	**15.42**	**5.54**	**4.49**	**7.18**
Grenada							
Live Animals	-0.12	0.00	0.00	0.00	0.00	-0.05	0.00
Meat, Meat Preprtns.	-6.05	-3.31	0.00	-2.75	-2.96	-3.09	-3.00
Dairy Products, Bird Eggs	-10.41	-12.76	-4.54	-6.81	-10.39	-7.39	-12.02
Fish, Crustaceans, Mollusc	**2.09**	**1.29**	**3.18**	**3.59**	**17.34**	**34.49**	**51.06**
Cereals, Cereal Preprtns.	-2.63	-2.83	-1.20	-2.17	-2.67	-2.28	-4.18
Vegetables and Fruit	-0.34	-1.36	0.31	-0.17	0.00	-1.34	0.24
Sugar, Sugar Preprtns., Honey	-16.15	-16.31	-11.92	-11.27	-12.79	-9.75	-19.30
Coffee, Tea, Cocoa, Spices	**100.35**	**139.06**	**184.80**	**145.04**	**172.26**	**172.66**	**143.04**
Animal Feed Stuff	0.00	-0.02	-1.22	0.00	0.00	0.00	-0.01
Misc. Edible Products etc.	-4.17	-5.92	-4.08	-1.85	-2.74	-2.77	-6.82
St. Kitts and Nevis							
Live Animals	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Meat, Meat Preprtns.	**0.01**	**0.03**	0.00	0.00	0.00	0.00	0.00
Dairy Products, Bird Eggs	-10.58	-6.54	-10.70	-9.11	-9.55	-11.54	-14.79
Fish, Crustaceans, Mollusc	-6.93	-1.75	-2.15	-1.81	-2.17	-3.11	-3.12
Cereals, Cereal Preprtns.	-1.23	-0.81	-0.73	0.36	0.17	9.64	17.31
Vegetables and Fruit	-1.65	-1.03	-1.04	-1.06	-1.06	-1.83	-0.20
Sugar, Sugar Preprtns., Honey	-10.49	-7.58	-10.36	-8.43	-5.36	-9.20	-13.81
Coffee, Tea, Cocoa, Spices	**199.58**	**206.05**	**212.31**	**183.03**	**199.71**	-3.87	-6.80
Animal Feed Stuff	-1.31	-1.17	-1.50	-0.74	-0.58	-0.56	3.70
Misc. Edible Products etc.	-6.93	-4.28	-4.94	-5.45	-5.63	-8.43	-7.35
St. Lucia							
Live Animals	-0.46	0.00	0.00	0.02	0.00	0.00	0.02
Meat, Meat Preprtns.	-4.57	-4.65	-4.15	-4.10	-6.23	-4.54	-5.01
Dairy Products, Bird Eggs	-10.14	-9.43	-5.12	-4.73	-4.63	-5.53	-5.89
Fish, Crustaceans, Mollusc	-1.97	-2.02	-1.82	-1.44	-1.68	-1.52	-1.08
Cereals, Cereal Preprtns.	-3.91	-4.19	-2.69	-2.90	-3.39	-3.99	-4.51
Vegetables and Fruit	**74.49**	**68.25**	**60.26**	**51.43**	**62.85**	**64.47**	**61.38**
Sugar, Sugar Preprtns., Honey	-9.66	-11.17	-6.94	-5.80	-5.72	-5.73	-9.23
Coffee, Tea, Cocoa, Spices	-1.55	-1.29	-0.09	-0.12	-0.23	-0.71	-0.27
Animal Feed Stuff	-0.07	-0.08	-0.05	-0.08	-0.04	-0.10	-0.03
Misc. Edible Products etc.	-2.41	-4.16	-5.20	-2.41	-1.80	-4.26	-2.61
St. Vincent and the Grenadines							
Live Animals	-0.21	0.00	0.00	0.00	0.00	0.00	-0.72
Meat, Meat Preprtns.	-8.44	-4.48	-8.86	-9.60	-9.67	-11.77	-11.68
Dairy Products, Bird Eggs	-11.84	-5.12	-7.34	-9.81	-7.61	-9.00	-9.03
Fish, Crustaceans, Mollusc	**4.90**	**1.40**	-1.24	**1.63**	-0.32	-0.54	-0.33
Cereals, Cereal Preprtns.	-1.93	**0.15**	-1.16	-1.31	-1.49	-1.67	-1.97
Vegetables and Fruit	**59.78**	**55.28**	**67.15**	**64.05**	**70.56**	**72.40**	**72.05**
Sugar, Sugar Preprtns., Honey	-18.84	-10.77	-14.07	-13.12	-11.31	-11.89	-19.52
Coffee, Tea, Cocoa, Spices	-0.06	-0.44	-0.17	-0.01	-0.32	0.58	-0.23
Animal Feed Stuff	-0.01	-0.01	-0.17	-0.27	-0.79	-0.17	0.00
Misc. Edible Products etc.	-7.96	-3.95	-4.05	-5.05	-3.66	-4.85	-5.32

Note: Revealed comparative advantages are highlighted in bold.

Table 3: Consistency of Revealed Comparative Advantage

	2000		2001		2002		2003		2004		2005		2006	
Cardinal	RCA^2_{ij}	RCA^3_{ij}	RCA^2_{ij}	RCA^3_{ij}	RCA^2_{ij}	RCA^3_{ij}	RCA^2_{ij}	RCA^3_{ij}	RCA^2_{ij}	RCA^3_{ij}	RCA^2_{ij}	RCA^3_{ij}	RCA^2_{ij}	RCA^3_{ij}
RCA^1_{ij}	0.37	**0.99**	0.37	**0.99**	0.43	**0.99**	0.36	**0.99**	0.44	**0.99**	**0.72**	**0.99**	**0.72**	**0.98**
RCA^2_{ij}		0.39		0.39		0.43		0.38		0.46		**0.73**		**0.74**
Ordinal	RCA^2_{ij}	RCA^3_{ij}	RCA^2_{ij}	RCA^3_{ij}	RCA^2_{ij}	RCA^3_{ij}	RCA^2_{ij}	RCA^3_{ij}	RCA^2_{ij}	RCA^3_{ij}	RCA^2_{ij}	RCA^3_{ij}	RCA^2_{ij}	RCA^3_{ij}
RCA^1_{ij}	**0.80**	0.52	**0.78**	0.55	**0.81**	0.42	0.69	0.54	**0.71**	0.52	**0.80**	0.45	0.75	0.58
RCA^2_{ij}		0.49		0.56		0.41		0.52		0.54		0.56		0.55
Dichotomous	RCA^2_{ij}	RCA^3_{ij}	RCA^2_{ij}	RCA^3_{ij}	RCA^2_{ij}	RCA^3_{ij}	RCA^2_{ij}	RCA^3_{ij}	RCA^2_{ij}	RCA^3_{ij}	RCA^2_{ij}	RCA^3_{ij}	RCA^2_{ij}	RCA^3_{ij}
RCA^1_{ij}	**0.73**	**0.94**	0.55	**0.89**	0.66	**0.94**	0.58	**0.77**	**0.79**	**0.94**	**0.79**	**0.94**	0.55	**0.79**
RCA^2_{ij}		0.68		0.59		**0.71**		**0.70**		**0.74**		**0.74**		**0.76**

Note: Correlations which indicate consistency between a pair of indices are highlighted in bold.

Table 4: Selected *RCA*[1] Four-Digit Indices

	2000	2001	2002	2003	2004	2005	2006
Dominica							
Veg. products, roots, tubrs	**468.51**	**1246.59**	**619.93**	**740.26**	**820.60**	**34.43**	**747.63**
Fruit, veg. flour, meal, flk	**3.05**	**3.76**	**3.03**	**13.08**	**11.73**	**20.23**	**29.34**
Oranges, etc.	**10.38**	**15.62**	**10.88**	**10.34**	**8.04**	**9.71**	**9.25**
Oth. citrus, fresh, dried	**72.48**	**116.79**	**140.77**	**128.37**	**99.38**	**96.02**	**67.95**
Bananas (including plantains), fresh or dried	**1296.06**	**1191.06**	**1269.07**	**1217.67**	**1323.04**	**1070.54**	**1274.15**
Edible nuts fresh, dried	**8.39**	**18.08**	**15.22**	**7.00**	**7.68**	**5.33**	**5.57**
Fruit, fresh, dried, nes	**7.14**	**11.48**	**10.22**	**14.88**	**19.04**	**26.49**	**17.53**
Jams, fruit jellies, marmalades, fruit or nut pastes as cooked preparation	0.44	0.71	**1.45**	**1.44**	**2.66**	**1.81**	**2.13**
Juices, other than citrus	**2.91**	**2.05**	**2.57**	**3.33**	**1.56**	**1.41**	**4.70**
Cocoa beans, whole or broken, raw or roasted	**3.16**	**3.82**	**3.37**	**3.79**	**1.24**	0.88	0.97
Pepper, dry, crushd, ground	**3.15**	0.65	0.21	0.21	**2.31**	**1.20**	**1.28**
Spices, ex. pepper, pimento	**47.46**	**79.48**	**53.42**	**49.62**	**40.13**	**56.18**	**51.40**
Sauce, seasoning, condiment	**124.20**	**106.77**	**164.92**	**121.88**	**53.65**	**39.27**	**65.59**
Grenada							
Fish, fresh, chilled, whole	**11.68**	**44.58**	**45.34**	**10.05**	**52.45**	**446.29**	**151.76**
Fish, frozen ex. fillets	**3.04**	0.00	**13.21**	**13.21**	**45.38**	**227.53**	**112.76**
Bananas (including plantains), fresh or dried	**17.61**	**15.23**	**28.35**	**24.85**	**37.76**	0.00	0.00
Fruit, fresh, dried, nes	**2.14**	**1.28**	**2.78**	**2.63**	**2.71**	0.98	**10.83**
Pepper, dry, crushd, ground	**2.10**	0.00	**2.18**	**7.52**	0.36	0.00	0.00
Spices, ex. pepper, pimento	**3408.81**	**4328.89**	**5387.28**	**4061.25**	**5001.25**	**6907.41**	**5044.95**
St. Kitts and Nevis							
Bovine meat, frozen	**5.00**	**7.89**	**1.68**	0.00	0.00	0.57	0.00
Meat and offal (other than liver), of swine, prepared or preserved, n.e.s	**4.43**	**1.86**	**3.13**	**2.39**	**1.89**	0.00	0.00
Crustaceans, frozen	**2.53**	0.61	0.54	**11.56**	**8.62**	0.00	**422.22**
Sugars, beet or cane, raw	**24363.35**	**30634.84**	**28363.89**	**26880.36**	**28672.44**	0.00	0.00
St. Lucia							
Bananas (including plantains), fresh or dried	**1788.41**	**1714.24**	**1736.03**	**1672.18**	**1817.52**	**1594.85**	**1590.73**
Fruit, fresh, dried, nes	**15.44**	**15.20**	**1.27**	**3.33**	**7.99**	**7.13**	**8.59**
Spices, ex. pepper ,pimento	0.00	**6.62**	**22.33**	**20.15**	**19.56**	**14.13**	**7.13**
Soups and broths and preparations thereof	**8.96**	**14.12**	**9.58**	**13.09**	**17.81**	**22.23**	**27.46**
St. Vincent and the Grenadines							
Fish, fresh, chilled, whole	**18.32**	**22.64**	0.00	**9.76**	0.59	0.00	0.00
Rice, milled, semi-milled	**7.92**	**35.25**	**33.25**	**42.49**	**24.08**	**6.25**	**28.35**
Veg. products, roots ,tubrs	**144.71**	**296.09**	**332.01**	**295.15**	**242.62**	**12.73**	**417.40**
Bananas (including plantains), fresh or dried	**1443.28**	**1389.61**	**1877.24**	**625.69**	**2025.08**	**1766.51**	**1827.52**
Spices, ex. pepper, pimento	**10.60**	**6.35**	**9.58**	**14.79**	**5.32**	**45.94**	**11.50**

Note: Revealed comparative advantages are highlighted in bold.