New Empirical Insights into the "Natural Trading Partner" Hypothesis for CARICOM Countries

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Abstract: The central notion of the natural trading partner hypothesis is that a Free Trade Agreement (FTA) will be welfare enhancing for members if there is a strong level of bilateral trade complementarity among their trade structures. This paper presents an empirical examination of this issue with reference to a small developing trade bloc–the Caribbean Community (CARICOM) and its trading partners. The trade intensity index model is used to assess the determinants of intra-CARICOM and extra-CARICOM trade, placing focus on trade complementarity. The results showed that intra-CARICOM trade complementarity is low and concentrated in a few primary industries which can provide a possible explanation for the persistent low levels of intra-CARICOM trade. The findings also indicate that trade complementarity is generally low between CARICOM countries and their proposed FTA partners in the European Union (EU) and North America. The best natural trading partners for CARICOM countries are then identified based on a ranking of countries from 7 regions (CARICOM, the EU, North America, Asia, Central America, Latin America and Africa).

Key Words: natural trading partner hypothesis, trade complementarity, trade intensity index

model, CARICOM countries

JEL Classifications: F13, F14, F15

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1. Introduction

The success of trade agreements in promoting trade is most feasible in an environment where countries or prospective countries of a FTA are endowed with comparative advantage in diverse products or strong trade complementarities (see Schiff 2001, Kemal 2003, Trebilcock and Howse 2005, Feaver and Wilson 2005, Yang and Gupta 2005 and Hapsari and Mangunsong 2006). In fact, the natural trading partner hypothesis identifies those characteristics −trade complementarity, geographic proximity and high initial trade volumes− that countries should share prior to the formation of a FTA in order to foster greater economic outcomes.

Despite almost 4 decades of regional integration initiatives, the low levels of intra-CARICOM trade have been a major concern for trade policy makers in the region (see Table 1).[3] Intra-CARICOM trade amounted to 8.54 per cent of CARICOM's total trade in 1973 and took approximately four (4) decades to double in size. Although a simultaneous decline in extra-regional exports is recorded, CARICOM countries' exports to the extra-regional market accounts for over 86 per cent of CARICOM's total exports in 2010. Many scholars in the CARICOM region raised queries about the rationale for economic integration among Caribbean countries in relation to its potential to improve intra-regional trade. Farrell (2001, 11-12) noted that "our basic motivation (for integration) is not economic at all … I believe that subconsciously we

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[3] The CARICOM trade agreement was established in 1973 and includes the following countries: Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, Trinidad and Tobago, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines and Suriname.

chose our partners first and then … began to worry consciously about the economics of the relationship."[4]

Table 1: The share of CARICOM countries trade (%)					
	CARICOM	Canada	EU	USA	ROW
1973	8.54	4.56	25.08	33.99	27.83
1975	4.59	2.89	13.83	63.84	14.86
1980	5.02	1.28	20.24	57.16	16.30
1985	5.38	2.66	15.11	64.34	12.51
1990	7.24	4.36	25.48	38.69	24.23
1995	10.73	4.79	22.28	32.76	29.44
2001	16.12	5.81	20.26	37.59	20.21
2002	14.11	5.63	21.15	39.61	19.51
2003	11.96	5.13	16.8	50.56	15.54
2004	11.78	4.78	15.73	53.16	14.54
2005	11.84	4.26	16.66	52.71	14.53
2006	11.05	4.16	20.49	48.25	16.04
2007	12.48	4.88	15.77	46.62	20.25
2008	12.47	3.77	21.59	38.66	23.51
2009	13.08	4.74	21.28	38.05	22.85
2010	13.91	5.51	14.64	37.71	28.22
Source: Own calculations from UN Comtrade (2013).					

The integration efforts among Caribbean countries have been largely centered on market driven integration. CARICOM was initially intended to be an intra-regional free trade area with the implementation of a common external tariff. However, Wint (2005, 138) noted that CARICOM as a FTA is "doomed to be a low impact activity." Wint (2005, 137) suggested that a major obstacle to increasing intra-CARICOM trade is the "lack of trade complementarity among CARICOM economies." Worrell (1994, 435-436) supported this notion by arguing that "…there are few complementarities that would make for intra-regional trade (in CARICOM), and efforts to develop them have not been successful."[5]

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[4] Farrell (2001) also noted that Caribbean economies are not in a position to capitalize on the benefits that a larger regional market can offer small developing countries as their production structures are not sufficiently developed. Farrell suggested that resource-production integration is more feasible for the Caribbean region.

[5] Morgan (1962) also supported this view insofar that countries in the West Indies are essentially primary producers and tariff reductions will not lead to any significant increases in the volume or composition of trade.

These views are 'unsubstantiated' as the level of trade complementarity among CARICOM countries is yet to be fully evaluated from an empirical standpoint. This paper fills this empirical gap by using a trade intensity index model to determine the level and dynamics of trade complementarity at the industry and country level for CARICOM countries. A detailed empirical assessment of trade complementarity in the extra-regional market is policy relevant at this time as CARICOM countries are negotiating full FTAs with their former preference donors in North-America and the EU.[6] Given the CARICOM region's persistent low levels of intra-regional trade and their active extra-regional trade agenda in the coming years, it is imperative that a rigorous empirical analysis on the dynamics of trade complementarity for CARICOM member's be undertaken. The rest of this paper is organised as follows. The next section discusses the natural trading partner hypothesis in relation to FTAs. Section 2 reviews the natural trading partner hypothesis. Section 3 outlines a measure for trade complementarity. Section 4 discusses the data used in the trade intensity index model. Section 5 provides the results from the model for CARICOM and non-CARICOM countries. Section 6 concludes the paper.

2. The "Natural Trading Partner" Hypothesis

The natural trading partner hypothesis and the notion that FTAs among natural trading partners is more likely to improve their economic welfare were introduced by Wonnacott and Lutz (1989). The literature identifies several measures for determining a country's natural trading partner. Prominent among them are the initial volume of trade, geographic proximity and trade complementarity.

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[6] These agreements include the Lome Convention, Caribbean Canada Trade Agreement (CARIBCAN) and the Caribbean Basin Initiative (CBI) with the EU, Canada and the United States of America (USA), respectively.

Initial Volume of Trade

The notion that a high initial volume of trade between prospective members of a FTA will increase welfare was introduced by Lipsey (1960). Lipsey (1960, 507-8) asserted that "... the larger are purchases of domestic commodities and the smaller are purchases from the outside world, the more likely it is that the union will bring gain." Wonnacott and Lutz (1989, 69) argued that if the prospective members of a FTA are initially important trading partners then the formation of a FTA among them "… will be reinforcing natural trading partners, not artificially diverting them." Summers (1991, 3) supporting the initial volume of trade criterion argued that if "blocs are created between countries that already trade disproportionately; the risk of large amounts of trade diversion is reduced." Park (1995) also suggested that if the share of intra-regional trade in total trade is small then this would increase the possibility that trade blocs would result in trade diversion.

Geography

Wonnacott and Lutz (1989) identified geographic proximity as another important criterion to identify a natural trading partner. Krugman (1993) noted that there is a strong tendency for countries in geographic proximity to trade more with each other because of the benefits from low transportation and communication costs. Indeed, Deardorff and Stern (1994) asserted that if countries are located close to each other, then the formation of a FTA can increase their economic welfare as there are benefits to be derived from lower transaction costs. Krugman (1991, 1993) considered economic geography; transportation cost in particular, to show that the

success of FTAs depend on the geographic proximity of trading partners. The underlying principle of Krugman's notion is that in the case where inter-continental transport cost is zero; the creation of continental FTAs is likely to reduce economic welfare. On the other hand, when inter-continental transport cost is infinite, continental FTAs are likely to be welfare improving (see Frankel, Stein and Wei 1996 for an extension of this model).[7] This notion was strongly refuted by Panagariya (1999, 16) using the following example:[8]

> Suppose the world consists of two continents, two countries per continent, and two goods produced at constant but different labour costs *a la Ricardo*. Suppose further that the countries located on the same continent are identical in all respects but differ across continents. Despite positive transport costs across continents but none within a continent, there are no gains from forming continental blocs whereas, with sufficiently large comparative cost differences across continents, gains are available to blocs between countries across continents.

Furthermore, Bhagwati (1993) and Bhagwati and Panagariya (1996) comprehensively critiqued both criteria (initial volume of trade and geographic proximity) for defining a natural trading partner.[9] Empirical evidence refuting the natural trading partner hypothesis on the basis of a high initial volume of trade and geographic proximity was first provided by Krishna (2003) and then Magee (2004). Krishna (2003) examined trade between the USA and 24 of its trading partners and found that changes in welfare were uncorrelated with both the initial volume of trade and geographic distance (see also Magee 2004, Lee and Park 2006 and Yener 2008 for similar results).

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[7] The underlying assumptions of geographic proximity as proposed by these authors are that the countries are identical and are characterized by a one factor one industry model in an environment of zero intra-continental transport cost (Gil-Pareja, Llorca-Vivero and Martínez-Serrano 2012).
[8] See also (Lawrence 1996, Krueger 1999, Nadav and Kleiman 2008).
[9] See Bhagwati and Panagariya (1996) for a systematic critique of the volume of trade and the geographic criteria.

Trade Complementarity

The shortcomings associated with the natural trading partner hypothesis formulated in reference to geography and initial volume of trade paved the way for Schiff (2001) to redefine the natural trading partner hypothesis in terms of trade complementarity. Schiff (2001) asserted that trading partners are natural if their trading structure is characterised by complementarity.[10]

Schiff (2001) developed a theoretical model to establish that a FTA between countries with strong and improving complementary trade structures is more likely to be welfare enhancing. In this regard, trade complementarity appears to be a strong measure for defining a country's real natural trade partner.[11] The nitty-gritty of this argument has to do with the export capacity of the exporting country being large enough to fulfill the import demand of the importing country competitively. The importing country's market now becomes the natural trade market for the exporting country as the exporting country's trade can survive in a highly competitive environment in that market. Likewise the importing country would be importing from the most efficient supplier thus avoiding possible trade diversion.

The fundamental condition here is for the exporting country to have comparative advantage in its export trade to the relevant importing country implying that the importing country should have a comparative disadvantage in similar trade owing to *inter alia* some sub-optimal production

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[10] Shakur and Ness (2011) assess the level of trade complementarity between ASEAN, Australia and New Zealand Free Trade Area (AANZFTA) and determined that New Zealand and ASEAN5 are moderate natural trading partners based on a trade complementarity index. See also Pitigala (2005) for similar study on South Asian countries.
[11] This does not mean that trade complementarity is mutually exclusive to geographic closeness or high initial volume of trade but that the welfare gains from creating free trade agreements would arise largely from strong trade complementarity.

technique *vis-a-vis* the exporting country and the world. This means that the natural trading partner hypothesis pairs countries with diverse comparative advantage structures. This type of trading environment is largely trade creating and results in efficiency gains from comparative cost differential which in turn guarantees an optimal economic welfare outcome for the creation of FTAs. The trade complementarity criterion is superior to the geography and volume of trade criteria as it is based on the comparative advantage structure of trading partners (similar to arguments presented by Panagaria (1999)). The trade complementarity criterion is also consistent with traditional theories of international trade such as the Ricardian and Heckscher-Ohlin theories, unlike previous criteria of the natural trading partner hypothesis. Trade complementarity is important for defining a natural trading partner as it facilitates the efficient use of resources which is essential for small developing countries in a rapidly globalizing world economy. There are several studies that concur with the need for trade complementarity among members or prospective members of a FTA (see Kemal 2003, Trebilcock and Howse 2005, Feaver and Wilson 2005, Yang and Gupta 2005 and Hapsari and Mangunsong 2006).

3. Measuring Trade Complementarity: Trade Intensity Index Model

An apt measure to determine the level of trade complementarity between two countries can be obtained by examining the comparative advantage (disadvantage) structures of the relevant countries.[12] Drysdale (1967) introduced a trade intensity index model to assess the intensity of trade between an exporting country and its import partners. According to Drysdale, the intensity of bilateral trade between two countries can be assessed by a trade intensity index which takes

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[12] This comparison would determine whether there is significant complementarity between the relevant countries to boost trade outcomes.

into account all factors influencing bilateral trade between two countries. However, Drysdale and Garnaut (1982, 68) noted that a major limitation associated with the value of the trade intensity index in its aggregated form is that, "it fails to make allowance for the varying commodity composition of countries' foreign trade. Where commodities are not substitutable for each other, opportunities for bilateral trade are limited by the degree of complementarity in the commodity composition of one country's exports and the other's imports." The trade intensity index can be separated into a trade complementarity index which measures the traditional trade determining factors (comparative advantage) and the trade bias index which accounts for all the other factors influencing trade (see Drysdale 1967 and Yamazawa 1970). The trade intensity index (I_{ij}) can be shown as the product of a trade complementarity index (C_{ij}) and a trade bias index (B_{ij}).[13]

$$I_{ij} = C_{ij} * B_{ij} \tag{1}$$

The trade intensity index for country i's trade with country j takes the following form:

$$I_{ij} = \frac{X_{ij}}{X_i} / \frac{M_j}{M_w - M_i} \tag{2}$$

Where: X_{ij} – country i exports to country j,

X_i – country i total exports,

M_j – country j total imports,

M_i – country i total imports,

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[13] See Drysdale (1967), Drysdale and Garnaut (1982) and Yamazawa (1970) for a comprehensive review of the decomposition and application of trade intensity index.

M_w – world imports.

The trade intensity index has a theoretical range from a value greater than zero to less than infinity. The trade intensity index measures country i's exports to country j as a share in its total exports in relation to country j's imports from the world as a share in world imports. The structure of the trade intensity index means that trade between country i and country j is becoming more intensive when the trade intensity index takes on a value greater than one (1) while the opposite holds when the value of the trade intensity index takes on a value less than one (1). The term X_{ij} refers to actual trade between country i and country j which is influenced by several factors including comparative advantage structures and other non-traditional trade determining factors. To measure trade complementarity in the context of the natural trading partner hypothesis one would need to remove the non-traditional trade determining factors from equation (2). This modification can be done by introducing $\overline{X}_{ij}$ which represents the expected value of trade between country i and country j on the basis of their comparative advantage (see Drysdale 1967). This situation implies that if country i is a relatively large (small) exporter of commodity k in the world then country j is more likely (less likely) to import k from country i in relation to world trade in commodity k.[14] Expected trade between i and j is then formulated as:

$$\overline{X}_{ij}^{k} = \left(\frac{X_{i}^{k} * M_{j}^{k}}{M_{w}^{k} - M_{i}^{k}} \right) \tag{3}$$

Where: X_{i}^{k} – country i exports of commodity k,

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[14] This is based on the assumption that k is a homogenous product for which there is negligible transport costs and trade impediments in its trade between country i and country j (Yamazawa 1970).

M_j^k – country j imports of commodity k,

M_w^k – world imports of commodity k,

M_i^k – country i imports of commodity k.

Summing across the expected value of all k commodities, yields the expected value of total exports of country i going to country j as:

$$\overline{X}_{ij} = \sum_k \overline{X}_{ij}^k \qquad (4)$$

Substituting the expected value of trade $\left(\overline{X}_{ij}\right)$ for the actual trade $\left(X_{ij}\right)$ in the trade intensity index yields the trade complementarity index as:

$$C_{ij} = \sum_k \left\{ \frac{X_i^k}{X_i} * \frac{M_j^k}{M_j} * \frac{M_w - M_i}{M_w^k - M_i^k} \right\} \qquad (5)$$

The trade complementarity index for a product k for an exporting country i and an importing country j is determined by the weighted sum of country i's comparative advantage in commodity k and country j's comparative disadvantage in commodity k.[15] The export specialization for

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[15] The weight accounts for all other supply sources of commodity k. If other supply sources (the world supply excluding country i) have a comparative advantage in exporting commodity k relative to country i, then $\left[1 \middle/ \left(\frac{M_w^k - M_i^k}{M_w - M_i} \right) \right]$ would have a downward weighting effect on the index.

country i has the form of the Balassa's revealed comparative advantage index and country j's import specialization also takes on a similar structure.[16] The trade complementarity index has a theoretical range from a value greater than zero to a value less than infinity. A value of the trade complementarity index greater than one (1) indicates that there is trade complementarity between country i and country j. The other influences affecting the intensity of trade between country i and country j is captured by a special country bias index. The trade bias index takes into account factors such as language differences, tastes and preferences, policy of the trading partner, transport cost and product differentiation (Yamazawa 1970). It is obtained as follows:

$$B_{ij} = \left(\frac{X_{ij}}{X_i} \Big/ \frac{M_j}{M_w - M_i} \right) \Big/ \left(\frac{\overline{X}_{ij}}{X_i} \Big/ \frac{M_j}{M_w - M_i} \right) = \frac{X_{ij}}{\overline{X}_{ij}} \qquad (6)$$

Where X_{ij} and $\overline{X}_{ij}$ represent actual and expected trade, respectively. Substituting for $\overline{X}_{ij} = \sum_k \overline{X}_{ij}^k$ and simplifying yields:

$$B_{ij} = X_{ij} * \sum_k \left(\frac{M_w^k - M_i^k}{X_i^k * M_j^k} \right) \qquad (7)$$

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[16] Assuming that world exports is equal to world imports and world exports to country j is equal to country j import from the world then we can formulate country i's comparative advantage and j's comparative disadvantage index (RCD) for a homogeneous commodity k according to Balassa (1965) as follows:

$$RCA_i^k = \frac{X_{iw}^k}{X_{iw}} \Big/ \frac{X_{ww}^k}{X_{ww}} \text{ and } RCD_j^k = \frac{X_{wj}^k}{X_{wj}} \Big/ \frac{X_{ww}^k}{X_{ww}}$$

The trade bias index also has a theoretical range from a value greater than zero to a value less than infinity. If bilateral trade between i and j is determined only by traditional trade determining factors then the trade bias index takes on a value of one (1). In this context, the level of special country bias is defined as the divergence between the expected value of trade and the actual value of trade. A value of the trade bias index greater than one (1) indicates that country i has a special country bias towards country j.[17]

4. Data

The dataset used to calculate the various trade indices for CARICOM countries is constructed from the United Nations Commercial Trade Database. The computation of the trade indices require that the commodity (k) be homogeneous across countries and in this regard the Standard International Trade Classification (SITC) 3-digit level trade data is used (see Anderson 1983, Greenaway and Milner 1986, Menon 1996 and Elliott and Ikemoto 2004). The analysis covers a period of 10 years from 2001–2010 and the most updated trade statistics for this period is obtained from SITC revision 3 of the United Nations Commercial Trade Database. The bilateral trade complementarity index is calculated for each 264 SITC 3 digit commodities for a total of 852 bilateral trade relationships involving CARICOM countries. Bilateral trade data is required for the calculation of the trade intensity index and the trade bias index. However, some CARICOM countries do not trade with many non-CARICOM countries which limit the calculations using the two indices. The countries that were examined are 12 members of the CARICOM region and 60 non-CARICOM countries (see Table 2). The non-CARICOM

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[17] Studies that previously used the trade intensity approach include Drysdale (1967), Drysdale and Garnaut (1982), Yamazawa (1970), Anderson (1983), Hill (1985), Anderson and Garnaut (1985), Thornton (1987), Sarmad and Mahmood (1988), Aggarawal and Pandey (1992), Chow et al (1999), Vollrath and Johnston (2001), Vollrath (2003), Osimani (2005), Pitigala (2005), Ramayandi (2005), Drysdale and Xu (2004), Kim (2007), Weldemicael (2010), Tash et al (2012) and Kim (2012).

countries are chosen from trade blocs such as the EU, Latin America, North American Free Trade Agreement (NAFTA), Central America, Asia and some African countries.

Table 2: List of countries and their country codes			
Country name	country code	Country name	country code
CARICOM countries[18]		NAFTA	
Bahamas	BHS	Canada	CAN
Barbados	BRB	Mexico	MEX
Belize	BLZ	United States of America	USA
Dominica	DMA	Latin American Countries[19]	
Grenada	GRD	Argentina	ARG
Guyana	GUY	Bolivia	BOL
Jamaica	JAM	Brazil	BRA
Saint Kitts and Nevis	KNA	Colombia	COL
Saint Lucia	LCA	Ecuador	ECU
Saint Vincent and the Grenadines	VCT	Paraguay	PRY
Suriname	SUR	Peru	PER
Trinidad and Tobago	TTO	Uruguay	URY
European Union (25)		Central American countries	
Austria	AUT	Costa Rica	CRI
Belgium	BEL	El Salvador	SLV
Cyprus	CYP	Guatemala	GTM
Czech Republic	CZE	Honduras	HND
Denmark	DNK	Asia	
Estonia	EST	China	CHN
Finland	FIN	India	IND
France	FRA	Indonesia	IDN
Germany	DEU	Japan	JPN
Greece	GRC	Pakistan	PAK
Hungary	HUN	Philippines	PHL
Ireland	IRL	Singapore	SGP
Italy	ITA	Thailand	THA
Latvia	LVA	Other countries	
Lithuania	LTU	Algeria	DZA
Luxembourg	LUX	Australia	AUS
Malta	MLT	Belarus	BLR
Netherlands	NLD	Bulgaria	BGR
Poland	POL	Côte d'Ivoire	CIV
Portugal	PRT	Croatia	HRV
Slovakia	SVK	Egypt	EGY
Slovenia	SVN	Iceland	ISL
Spain	ESP	Israel	ISR
Sweden	SWE	New Zealand	NZL
United Kingdom	GBR	Russian Federation	RUS
		Turkey	TUR

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[18] The members of the Organization of the Eastern Caribbean States (OECS) are Dominica, Grenada, St. Kitts and Nevis, St. Lucia, and St. Vincent and Grenadines while the Most Developed Countries (MDCs) in the CARICOM are Trinidad and Tobago, Jamaica, Guyana, Suriname, The Bahamas, Barbados and Belize.
[19] MERCOSUR includes Argentina, Brazil, Paraguay and Uruguay.

5. Results

This section will firstly examine the results from the trade intensity index model to determine the top natural trading partners for the CARICOM region. The natural trading partner for the CARICOM region is determined by the highest value of the bilateral trade complementarity index. Specifically, the analysis identifies the best "natural" trading partners for CARICOM as a trade bloc to several trade blocs and for each CARICOM member to individual countries using data for the period 2001-2010. Then an examination of intra-CARICOM and extra-CARICOM trade complementarity is undertaken at the country and industry level. The results from the trade intensity index and trade bias index are then compared to the results from the trade complementarity index.

5.1 Who are CARICOM member's Top "Natural Trading Partners"?

The results from the trade complementarity index shows that the top natural trade blocs for the CARICOM region are Central America, MERCOSUR (Common Market of the South) and Asia. At the bloc level, the CARICOM reveals the highest level of trade complementarity with Central America, recording a trade complementarity index value of 1.33, followed by MERCOSUR and Asia with a trade complementarity index value of 1.18 and 1.17, respectively. It is important to note that neither the EU nor NAFTA (CARICOM major export markets) reveals an index value above one (1). Also interesting is that trade complementarity between CARICOM countries and BRICs is above one (1), (see Figure 1).[20]

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[20] BRIC is a group of emerging economies which includes Brazil, Russia, India and China.

15

Figure 1: CARICOM's Top Natural Trading Partners (2001-2010).
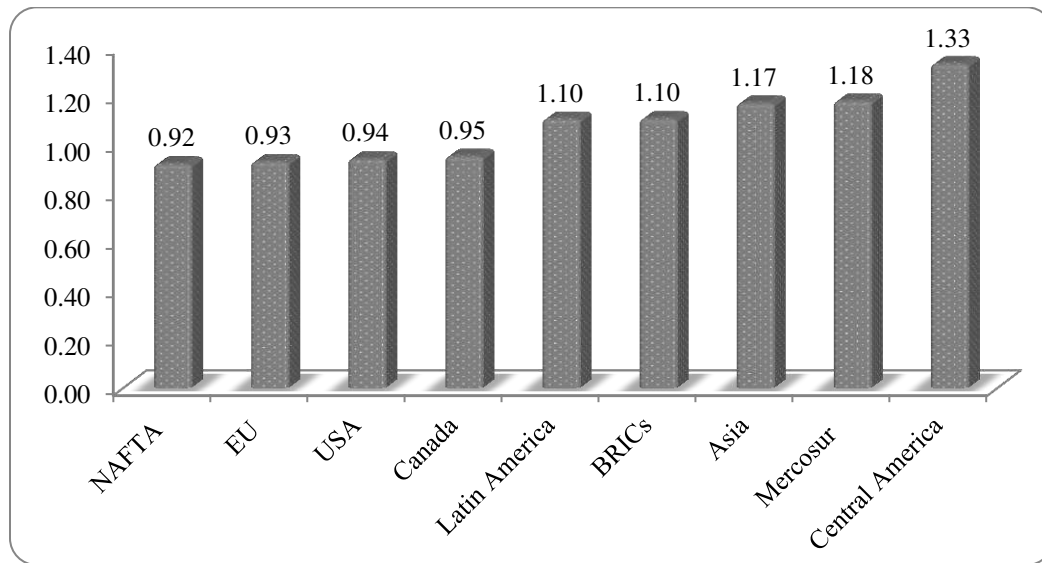
Source: Own calculations from UN Comtrade (2012).

Disaggregating the CARICOM region into two subgroups can provide further information to determine whether the natural trade blocs for the small countries are the same for the larger countries in the region. Figure 2 shows the trade complementarity index for the OECS group of countries. The results indicate that Central America, Latin America, Canada and the EU are the top natural trading partners for the OECS. Specifically, the trade complementarity index between the OECS and Central America averaged 1.56 for the period 2001-2010. Although CARICOM revealed a trade complementarity index over one (1) with MERCOSUR, Asia and BRICs, these countries are not natural trading partners for the OECS bloc as the value of their bilateral trade complementarity index remained below one (1).

16

Figure 2: OECS Top Natural Trading Partners (2001-2010)
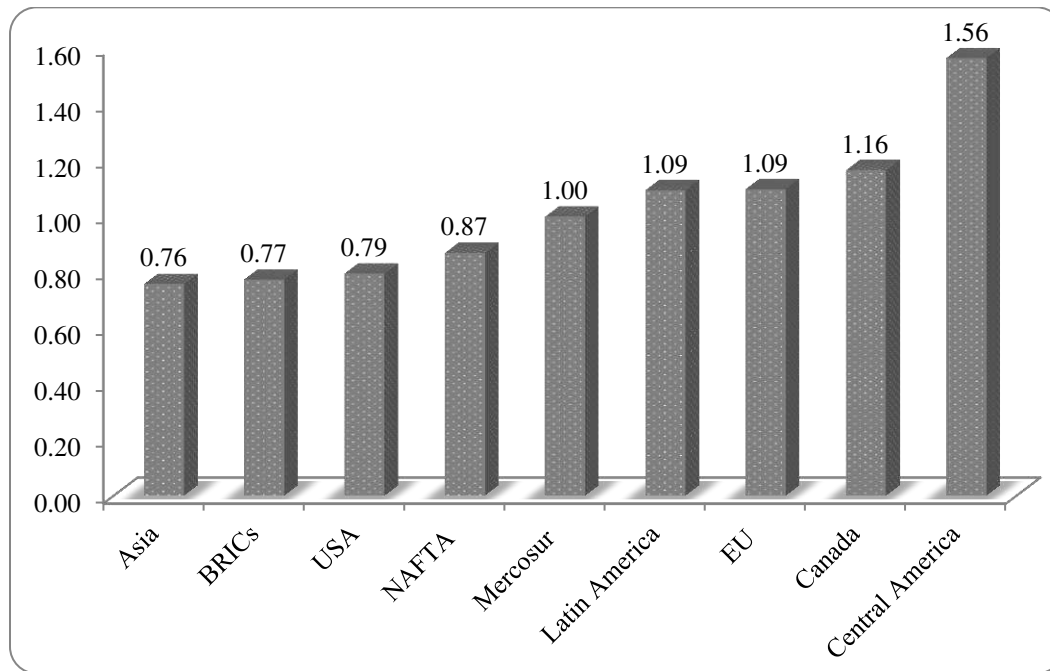
Source: Own calculations from UN Comtrade (2012).

Furthermore, an examination of the natural trade blocs for the MDCs in the CARICOM region revealed some interesting insights. In the first instance, Central America emerged as the best natural trade bloc for the MDCs in the CARICOM region. However, unlike the OECS, the value of the bilateral trade complementarity index between the MDCs and the EU is below one (1). More importantly is that Asia, BRICs and MERCOSUR emerged as being among the best natural trade blocs for the MDCs when compared to the OECS (Figure 3).

Figure 3: MDCs Top Natural Trading Partners (2001-2010).
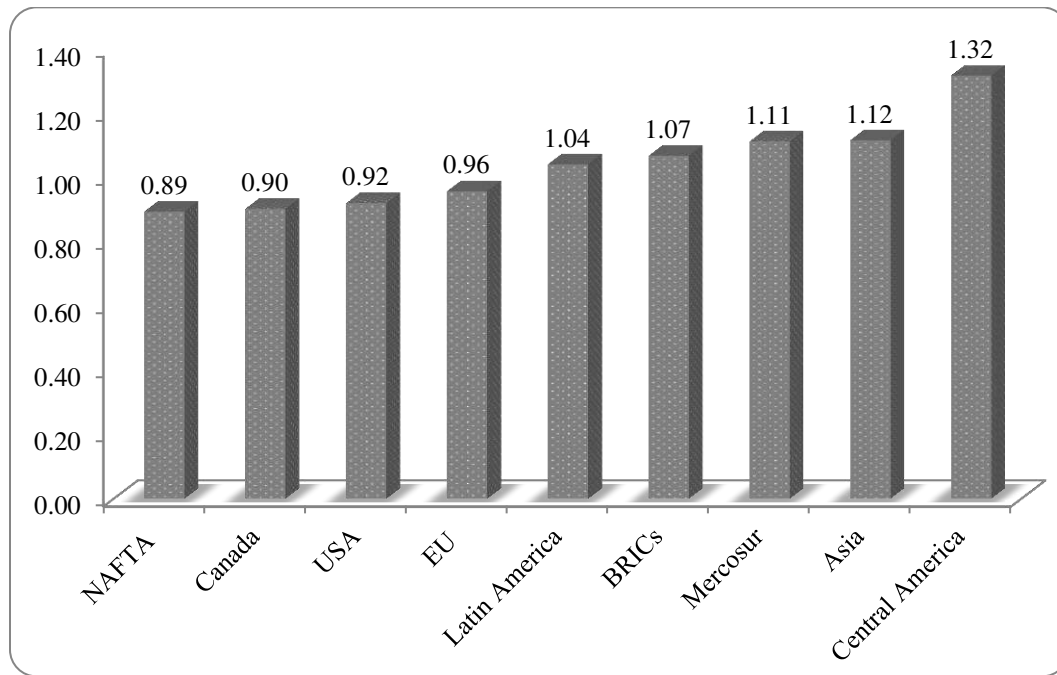
Source: Own calculations from UN Comtrade (2012).

The best natural trading partners for each CARICOM member is then determined by ranking the trade complementarity index for each CARICOM country in relation to 71 of the selected trading partners from the sample. The countries (ten) that reveal the highest level of trade complementarity with each CARICOM member is then defined as their "natural" trading partners (see Table 3). Some general observations can be made from the information in Table 3. In the first instance, the natural trading partners for Barbados, Belize, Dominica, St. Lucia, St. Vincent and the Grenadines and Grenada are CARICOM countries. On the other hand, the natural trading partners for Trinidad and Tobago, Jamaica, Suriname, Guyana, The Bahamas, and St. Kitts and Nevis were primarily dominated by non-CARICOM countries. It should be noted that several EU countries were also featured in some of CARICOM's list of top natural trading partners (Bahamas, Jamaica, and St. Kitts and Nevis). However, Canada only appeared in

the top 10 natural trading partners of Jamaica. The USA did not feature in the list of top ten

natural trading partners for the listed CARICOM members.

Table 3: CARICOM member's "natural" trading partners (2001-2010)											
	BHS		**BLZ**		**BRB**		**DMA**		**GRD**		**GUY**
ISL	2.63	LCA	2.14	DMA	3.90	BRB	3.09	DMA	12.18	ISL	8.32
GUY	1.84	RUS	2.11	LCA	3.79	LCA	2.99	BOL	11.90	CIV	6.82
ESP	1.59	JAM	1.98	VCT	3.71	VCT	2.99	LCA	8.76	IND	4.04
HND	1.49	VCT	1.92	GRD	3.53	BHS	2.94	SUR	5.80	VCT	3.33
CHN	1.43	BHS	1.91	KNA	3.18	KNA	2.86	KNA	5.20	RUS	2.71
PRY	1.41	BRB	1.90	GUY	3.03	GUY	2.81	CIV	4.72	JAM	2.45
JAM	1.40	GRD	1.89	BHS	2.90	BOL	2.66	BHS	2.85	DZA	2.42
CYP	1.40	DZA	1.87	BLZ	2.84	GRD	2.64	GUY	2.52	GRD	2.35
IDN	1.38	KNA	1.85	JAM	2.53	SLV	2.61	IDN	2.44	DMA	2.22
MLT	1.38	ISL	1.70	SUR	2.45	HND	2.36	BRB	2.13	ISR	2.21
	JAM		**KNA**		**LCA**		**SUR**		**TTO**		**VCT**
ISL	30.66	DZA	2.14	BHS	2.50	CIV	1.07	GUY	2.83	DMA	12.70
RUS	7.23	MEX	2.03	BRB	2.41	VCT	0.60	JAM	2.80	BOL	12.09
EGY	5.37	HUN	1.93	KNA	2.27	JAM	0.52	HND	2.29	LCA	10.13
NZL	4.51	GRD	1.91	DMA	2.21	GUY	0.49	BHS	2.14	CIV	7.97
ARG	3.63	RUS	1.84	GUY	2.14	BHS	0.48	BLR	2.10	KNA	5.70
SVN	3.22	VCT	1.75	RUS	2.00	DMA	0.45	PAK	2.06	SUR	5.64
CAN	2.41	EST	1.71	LVA	1.99	LCA	0.45	IDN	2.02	BHS	3.52
IDN	2.10	DMA	1.66	HND	1.86	HND	0.44	SUR	1.94	IDN	2.86
CHN	1.93	BRB	1.57	VCT	1.84	GRD	0.38	PRY	1.91	BRB	2.69
SVK	1.84	CZE	1.54	BLZ	1.83	CYP	0.34	DMA	1.85	GUY	2.60
Source: Own calculations from UN Comtrade (2012).											

5.2 Intra-CARICOM Trade Complementarity

The results from the trade complementarity indices for CARICOM countries are reported in

Table 4. The majority of the bilateral trade complementarity indices are above one (1) indicating

the presence of complementary trade structures among CARICOM countries for the most part. In

fact, the strongest level of trade complementarity is observed for Grenada and Dominica where

the value of their bilateral trade complementarity index is 14.77 for the period 2006-2010.

Another interesting observation is that the level of trade complementarity among members of the

Organization of Eastern Caribbean States (OECS) is larger when compared to other larger CARICOM countries.

The inter-temporal changes for trade complementarity among CARICOM countries reveal that approximately 53 per cent of the 132 bilateral combinations (12*11) reported an improvement from 2001-2005 to 2006-2010. On one extreme, countries such as Jamaica and St. Lucia have reported improvements in their structure of trade complementarity with all their CARICOM counter-parts while on the other extreme, it declined for Trinidad and Tobago and Barbados with all their listed CARICOM counterparts. Grenada's trade complementarity also improved with 10 CARICOM members but declined relative to Trinidad and Tobago. Furthermore, some members of the CARICOM region that began the period (2001-2005) with no trade complementarity in relation to their CARICOM counterparts, experienced improvements by the period 2006-2010. For example, Jamaica observed an improvement of the trade complementarity index from below one (1) to above one (1) with The Bahamas, Barbados, Belize, Grenada and Guyana.

Table 4: Trade complementarity indices for CARICOM countries (2001-2005 to 2006-2010)												
	BHS	BLZ	BRB	DMA	GRD	GUY	JAM	KNA	LCA	SUR	TTO	VCT
BHS		1.74	3.24	2.94	2.56	1.37	0.95	1.22	2.44	0.37	2.46	3.39
		2.07	2.56	2.95	3.33	1.41	1.63	1.09	2.61	0.60	1.82	3.65
BLZ	1.09		3.03	1.98	1.21	0.37	0.57	0.61	1.62	0.26	2.09	0.93
	1.33		2.65	1.90	1.20	0.48	1.17	0.80	2.19	0.40	1.61	1.05
BRB	1.29	1.71		2.98	1.96	1.88	1.02	1.69	2.19	0.31	1.85	2.36
	1.11	2.09		3.19	2.42	2.26	1.31	1.39	2.79	0.35	1.18	3.01
DMA	1.14	1.53	4.50		10.63	2.25	1.10	1.85	2.07	0.38	2.11	12.36
	1.44	1.49	3.30		14.77	2.20	1.57	1.34	2.43	0.52	1.59	13.03
GRD	1.02	1.79	3.65	2.56		2.26	0.87	2.25	1.59	0.33	1.59	2.28
	1.04	2.02	3.37	2.75		2.46	1.29	1.35	1.89	0.44	1.26	2.64
GUY	1.66	0.95	3.54	2.88	1.76		0.81	1.19	2.08	0.34	3.37	1.28
	2.03	0.90	2.53	2.74	3.79		1.74	1.16	2.25	0.64	2.30	3.92
JAM	1.17	1.78	2.85	1.88	1.72	2.36		1.55	1.60	0.42	2.93	1.98
	1.63	2.18	2.20	1.88	1.64	2.55		0.94	1.65	0.61	2.66	2.30

KNA	1.09	1.61	3.18	2.82	4.31	1.38	0.75		1.88	0.29	1.48	5.63
	0.68	2.25	3.18	2.93	6.69	1.72	0.86		2.92	0.28	0.83	5.83
LCA	1.64	2.17	3.99	3.11	7.68	2.05	1.06	1.58		0.40	1.94	10.68
	1.05	2.10	3.46	2.79	10.55	1.96	1.44	1.21		0.53	1.69	9.22
SUR	1.13	1.25	2.80	1.33	4.06	1.38	0.74	1.42	1.52		2.16	4.74
	1.37	1.08	2.11	1.28	8.69	1.47	2.21	0.76	1.65		1.73	6.54
TTO	0.74	1.06	1.44	1.08	1.58	1.15	0.50	0.91	0.90	0.18		2.12
	0.63	2.28	1.27	1.31	1.20	1.09	0.69	0.73	0.83	0.14		1.48
VCT	1.03	2.04	4.07	3.02	1.70	3.18	0.99	2.05	1.63	0.54	1.70	
	1.47	1.81	3.35	2.96	2.27	3.48	1.54	1.24	2.18	0.65	1.49	

Source: Own calculations from UN Comtrade (2012).
Note: Exporting countries listed in columns.

5.3 Product Complementarity for Intra-CARICOM Trade

It should be noted that a relatively large value of the trade complementarity index does not necessarily mean that the trading partners have complementarity in a wide range of commodities. Thus, it is important to examine trade complementarity at the industry level. Further analysis into the composition of product trade complementarity among CARICOM countries reveals that trade complementarity originates from a few primary product groups.

The Bahamas observed complementarity in petroleum products (SITC 334) with St. Lucia, Jamaica and Guyana. Indeed, complementarity in petroleum products (SITC 334) between The Bahamas and the latter two countries has improved in the last decade (Table 5). Product complementarity for Belize exists in sugar, molasses and honey (SITC 061), petroleum, oils and crude (SITC 333) and fruit and vegetable juices (SITC 059) with 4 CARICOM members. Trinidad and Tobago began the decade with complementarity in petroleum products with 8 of its CARICOM counterparts but this declined to 6 in the latter part of the decade. Guyana's complementarity is dominated by rice (SITC 042) and sugar, molasses and honey (SITC 061). Products such as soap, cleaners and polish (SITC 554) are the only products that Dominica has

revealed and maintained complementarity in with 9 members of the CARICOM region, although in some instances it has declined over time. St. Vincent and the Grenadines reported complementarity in meal, flour of wheat (SITC 046) for the period 2001-2010. Complementarity for St. Kitts and Nevis is observed in the product group (SITC 061) but this product group declined to below one (1) by the end of the period.

Overall, the structure intra-CARICOM trade complementarity is explained by a total of 6 commodity groups at the SITC 3 digit level, the majority of which are primary and natural resource intensive in nature. The empirical evidence suggests that there has been no significant dynamism in the growth or expansion of intra-CARICOM trade complementarity in new product areas over the last decade.

Table 5: Product complementarity for intra-CARICOM trade $(C_{ij}>1$ for either 2001-2005 to 2006-2010)						
CARICOM	**Partner**	**Description**	**SITC**	**01-05**	**06-10**	**Δ**
BHS	LCA	Petroleum products	334	0.50	1.05	+
BHS	JAM	Petroleum products	334	0.67	1.19	+
BHS	GUY	Petroleum products	334	1.47	1.53	+
BLZ	VCT	Sugars, molasses and honey	061	1.10	0.80	-
BLZ	LCA	Fruit, vegetable juices	059	0.96	1.18	+
BLZ	KNA	Fruit, vegetable juices	059	0.88	1.39	+
BLZ	BHS	Fruit, vegetable juices	059	0.81	1.20	+
BRB	GUY	Petroleum products	334	1.45	0.71	-
DMA	VCT	Soap, cleaners, polish etc.	554	1.59	1.48	*
DMA	LCA	Soap, cleaners, polish etc.	554	1.31	1.15	*
DMA	KNA	Soap, cleaners, polish etc.	554	1.29	1.33	+
DMA	JAM	Soap, cleaners, polish etc.	554	1.12	1.11	*
DMA	GUY	Soap, cleaners, polish etc.	554	1.90	1.69	*
DMA	GRD	Soap, cleaners, polish etc.	554	1.49	1.49	*
DMA	BLZ	Soap, cleaners, polish etc.	554	1.03	1.14	+
DMA	BRB	Soap, cleaners, polish etc.	554	1.34	1.67	+
DMA	BHS	Soap, cleaners, polish etc.	554	1.23	1.25	*
GRD	SUR	Meal, flour of wheat, MSLN	046	3.02	7.59	+
GRD	VCT	Meal, flour of wheat, MSLN	046	0.51	1.02	+
GRD	LCA	Meal, flour of wheat, MSLN	046	6.47	9.26	+
GRD	KNA	Meal, flour of wheat, MSLN	046	2.87	4.89	+
GRD	GUY	Meal, flour of wheat, MSLN	046	0.67	2.33	+
GRD	DMA	Meal, flour of wheat, MSLN	046	8.55	13.15	+

GRD	BHS	Meal, flour of wheat, MSLN	046	1.09	2.03	+
GUY	SUR	Sugars, molasses and honey	061	1.17	0.83	-
GUY	VCT	Rice	042	1.18	1.7	+
GUY	VCT	Sugars, molasses and honey	061	1.39	0.97	-
GUY	JAM	Sugars, molasses and honey	061	1.21	1.03	*
GUY	JAM	Rice	042	0.70	1.06	+
GUY	GRD	Sugars, molasses and honey	061	1.05	0.95	-
GUY	DMA	Sugars, molasses and honey	061	1.27	0.88	-
JAM	GUY	Petroleum products	334	0.40	1.18	+
KNA	VCT	Sugars, molasses and honey	061	1.08	0.00	-
LCA	GUY	Petroleum products	334	1.22	1.03	+
TTO	SUR	Petroleum products	334	1.63	1.08	*
TTO	VCT	Petroleum products	334	0.84	1.02	+
TTO	LCA	Petroleum products	334	1.16	1.12	*
TTO	JAM	Petroleum products	334	1.70	1.31	*
TTO	GUY	Petroleum products	334	2.57	1.77	*
TTO	DMA	Petroleum products	334	1.07	0.98	-
TTO	BLZ	Petroleum products	334	1.47	0.95	-
TTO	BRB	Petroleum products	334	1.19	0.65	-
TTO	BHS	Petroleum products	334	1.60	1.42	*
VCT	SUR	Meal, flour of wheat, MSLN	046	3.80	5.31	+
VCT	LCA	Meal, flour of wheat, MSLN	046	8.66	7.16	*
VCT	KNA	Meal, flour of wheat, MSLN	046	3.69	3.72	+
VCT	GUY	Meal, flour of wheat, MSLN	046	0.59	2.32	+
VCT	DMA	Meal, flour of wheat, MSLN	046	10.86	11.06	+
VCT	BHS	Meal, flour of wheat, MSLN	046	1.38	1.65	+

Source: Own calculations from UN Comtrade (2012).

Notes: * means that trade complementarity has declined but remained above one (1).

+ means that trade complementarity has improved from below one (1) to above one (1).

- means that trade complementarity has declined from above one (1) to below one (1).

5.4 Extra-CARICOM Trade Complementarity

The level of trade complementarity between 12 CARICOM countries and 60 non-CARICOM countries from the EU, North America, Asia, Latin America, Central America, and Africa are explored in this section (see Tables 6 and 7).

European Union (25)

In the first instance, the level of trade complementarity for CARICOM's trade with its 25 EU trade partners are low since the value of their bilateral trade complementarity index are either below or marginally above one (1). Comparatively, the level of trade complementarity between CARICOM and the EU countries is lower than intra-CARICOM trade complementarity in general. Product complementarity for CARICOM exports to the EU are observed for products such as petroleum products (SITC 334) and soap, cleaners and polish (SITC 554). However, a general decline is observed for aluminum ore and concentrates (SITC 285).

North American Free Trade Agreement

In relation to the NAFTA market, a low level of trade complementarity is observed between CARICOM and NAFTA countries with the exception of Jamaica in relation to Canada and for St. Kitts and Nevis in relation to Mexico. There have not been considerable improvements in the level of complementarity between CARICOM and NAFTA members over the last decade since their trade complementarity indices remain below (1) in most instances.

Latin American Countries

CARICOM's trade complementarity in relation to Latin American countries originates largely from meal and wheat (SITC 046), aluminum ore and concentrates (SITC 285), petroleum products (SITC 334), and soap, cleaners and polish (SITC 554) and sugars, molasses and honey

(SITC 061) for the period 2001-2005, but declined in the 4 product groups with only the trade complementarity index for aluminum ore and concentrates (SITC 285) remaining above one (1).

Central American Countries

The structure of trade complementarity between CARICOM and the Central American countries is made up of electric switch, relay and circuit (SITC 772), soap, cleaners and polish (SITC 554) and petroleum products (SITC 334). In relation to the African market, trade complementarity is dominated by SITC (046, 034, 042 061, 285, 036 and 057) with countries such as Côte d'Ivoire, Algeria and Egypt. The Bahamas, Belize, Guyana and Jamaica also reported complementarity with Iceland in Crustaceans, molluscs and aquatic invertebrates (SITC 036) in the case of the former 2 and aluminum ore and concentrates (SITC 285) for the latter 2 over the period. Jamaica also displays strong complementarity with New Zealand in aluminum ore and concentrates (SITC 285).

Asian Countries

Trade complementarity between CARICOM and Asian countries originate from aluminum ore and concentrates (SITC 285) and polymers of styrene (SITC 572) with China for the period 2001-2005 but complementarity in both product groups have declined by 2006-2010 with the latter falling below one (1). For Indonesia, CARICOM began the decade (2001-2005) with complementarity in 3 product groups namely sugars, molasses and honey (SITC 061), aluminum ore and concentrates (SITC 285), and petroleum products (SITC 334). Grenada also reveals

significant improvements for meal and wheat (SITC 046) in relation to Indonesia as their trade complementarity index value for this product group increased from 1.10 in 2001-2005 to 2.26 for the period 2006-2010. Guyana's complementarity with India and Turkey is dominated by gold (SITC 971). With the exception of the Indian market, product complementarity in the other market declined below one (1) in the latter period. In the case of Pakistan, product complementarity is observed in petroleum products (SITC 334) and spices (SITC 075) but has declined in both product groups by 2006-2010. On the other hand, there were significant improvements in complementarity between Guyana and St. Vincent and the Grenadines relative to the Philippines for rice (SITC 042) over the period 2001-2010 (see Table 7).

The general observation from the extra-regional market is that CARICOM countries have complementarity in a wider range of commodities with the non-CARICOM countries in Table 7, although this complementarity is concentrated in primary products. Moreover, the results indicate that the level of trade complementarity between the CARICOM region and its proposed FTA partners is generally low and appears to be weakening (Tables 6 and 7). This situation has the potential to hinder the expected benefits from these trade agreements.

Table 6: Trade complementarity indices for CARICOM countries and their trading partners (2001-2005 to 2006-2010).											
	BHS	BLZ	BRB	DMA	GRD	GUY	JAM	KNA	LCA	SUR	TTO	VCT
European Union (25)											
AUT	0.74	0.76	1.09	1.17	0.92	0.70	0.48	1.12	1.03	0.10	0.85	0.92
	0.87	0.97	1.09	1.27	0.94	0.96	0.58	0.96	1.02	0.14	0.95	0.99
BEL	0.99	1.06	1.23	1.48	0.82	1.23	0.57	0.83	1.22	0.11	1.18	1.23
	1.28	1.25	1.29	1.45	1.00	0.82	0.71	0.56	1.18	0.15	1.27	1.22
CYP	1.07	0.78	1.93	2.15	0.95	0.88	0.54	0.79	1.41	0.23	1.45	1.04
	1.72	1.01	1.98	2.26	1.30	0.86	1.25	0.85	2.02	0.45	1.47	1.64
CZE	0.73	0.39	1.03	1.22	0.85	0.35	0.42	1.53	0.96	0.09	1.03	0.91
	0.62	0.57	0.93	1.24	0.93	0.40	0.41	1.57	0.90	0.08	0.90	1.06

DEU	0.68	0.67	0.86	1.15	0.82	0.54	0.71	0.93	1.13	0.09	1.00	1.05
	0.74	0.89	0.87	1.07	0.80	0.55	0.66	0.86	0.96	0.10	1.08	0.92
DNK	1.38	1.03	1.33	1.37	1.84	0.99	0.50	0.96	1.38	0.14	0.78	1.60
	1.24	1.11	1.40	1.47	2.11	0.94	0.66	1.05	1.48	0.17	0.58	1.70
ESP	1.73	1.22	1.05	1.16	1.18	1.09	0.81	0.85	1.04	0.11	1.07	0.92
	1.46	1.36	1.10	1.09	1.29	0.84	0.90	0.85	1.04	0.14	1.24	1.01
EST	1.08	0.73	1.64	1.50	2.02	0.93	0.63	1.85	1.46	0.17	1.29	1.33
	1.49	0.84	1.67	1.43	1.65	1.02	1.17	1.48	2.01	0.36	1.46	1.32
FIN	0.80	0.57	1.07	1.16	0.72	0.59	0.46	1.18	1.09	0.11	1.16	0.84
	0.76	0.87	1.06	1.10	0.79	0.50	0.69	1.23	1.03	0.14	0.95	0.86
FRA	0.95	0.88	1.07	1.44	1.10	0.68	0.79	0.83	1.14	0.11	1.05	1.20
	0.99	1.17	1.17	1.35	1.15	0.65	0.79	0.81	1.10	0.14	1.13	1.14
GBR	0.77	0.86	1.10	1.30	0.82	0.86	0.55	0.88	1.37	0.13	0.57	1.13
	0.88	1.13	1.23	1.41	1.00	0.81	0.77	0.94	1.48	0.14	0.72	1.19
GRC	1.13	0.80	1.22	1.88	1.33	0.63	0.60	0.55	1.25	0.13	1.35	1.22
	1.20	1.34	1.38	1.64	1.21	0.84	0.90	0.62	1.20	0.18	1.03	1.06
HUN	0.60	0.28	0.95	1.09	0.86	0.31	0.36	1.92	0.76	0.07	0.90	0.63
	0.69	0.43	0.87	1.08	0.87	0.38	0.42	1.96	0.75	0.09	1.02	0.81
IRL	0.78	0.65	1.23	1.37	1.24	0.67	1.58	1.09	1.07	0.12	0.70	1.16
	1.14	1.16	1.53	1.63	1.50	0.95	1.58	0.89	1.34	0.18	0.92	1.78
ITA	1.31	0.82	0.83	1.08	0.65	1.28	0.67	0.80	0.84	0.10	0.73	0.78
	1.18	1.03	0.90	1.03	0.74	0.94	0.61	0.68	0.79	0.09	0.89	0.73
LTU	0.89	0.70	1.13	1.86	1.28	0.65	0.40	0.84	1.19	0.10	1.28	1.21
	0.79	1.67	1.17	2.06	1.14	0.70	0.62	0.75	1.38	0.11	1.41	1.61
LUX	1.06	0.59	1.51	1.78	0.86	0.42	0.62	0.82	1.72	0.19	1.22	1.41
	1.17	0.69	1.42	1.85	0.99	0.59	1.19	0.85	1.83	0.28	0.94	1.37
LVA	1.10	0.76	1.93	2.18	1.62	0.71	0.70	0.94	1.99	0.22	1.57	1.56
	1.23	1.08	1.77	2.02	1.44	0.97	1.00	0.93	2.00	0.26	1.54	1.60
MLT	1.21	0.87	1.81	1.72	1.05	1.05	0.52	1.29	1.47	0.18	1.25	1.26
	1.55	0.92	1.72	1.90	1.57	1.19	0.95	0.98	1.58	0.30	0.96	1.45
NLD	0.71	0.82	0.96	1.23	1.23	0.52	0.82	0.64	1.14	0.11	1.00	1.27
	0.82	1.12	0.90	1.35	1.32	0.57	0.86	0.81	1.18	0.16	0.87	1.41
POL	1.04	0.52	0.97	1.72	1.26	0.44	0.63	0.91	1.11	0.08	1.12	1.23
	1.06	0.86	0.94	1.55	1.24	0.47	0.56	1.03	0.99	0.10	0.66	1.13
PRT	1.20	1.10	1.19	1.66	0.99	1.16	0.46	1.03	1.20	0.12	0.92	1.21
	1.18	1.45	1.14	1.65	1.32	0.99	0.53	0.80	1.05	0.11	0.86	1.24
SVK	0.63	0.40	0.97	1.19	0.93	0.67	2.33	1.18	0.87	0.09	1.24	0.93
	0.76	0.64	0.95	1.13	1.01	0.69	1.35	1.60	0.90	0.09	1.10	1.14
SVN	1.24	0.55	1.28	1.63	0.97	0.93	3.26	1.07	1.10	0.13	1.37	1.19
	1.46	0.68	1.14	1.71	1.17	1.24	3.18	0.78	1.12	0.23	1.13	1.38
SWE	0.79	0.54	0.97	1.24	0.98	0.54	0.73	0.93	1.19	0.11	0.84	1.02
	0.95	0.87	0.99	1.22	1.20	0.56	0.69	1.00	1.13	0.15	0.76	1.00
NAFTA												
CAN	0.88	0.78	0.94	1.33	0.88	0.97	2.47	0.97	1.10	0.10	0.63	1.01
	0.90	1.15	1.08	1.55	0.95	1.58	2.34	0.95	1.23	0.12	0.63	1.17
MEX	0.76	0.26	0.86	0.70	1.05	0.42	0.35	2.04	0.82	0.08	0.73	0.65
	1.00	0.36	0.79	0.71	0.90	0.53	0.54	2.00	0.90	0.17	0.76	0.88
USA	0.93	0.66	0.87	0.56	0.86	0.75	0.70	0.73	1.00	0.10	0.97	0.65
	0.95	1.11	1.03	0.60	0.85	0.73	0.76	0.94	1.06	0.12	0.92	0.72
Latin America												
ARG	0.73	0.22	0.92	1.71	0.92	0.66	4.56	0.72	0.79	0.07	0.81	0.61
	1.10	0.21	0.72	1.22	0.73	0.73	2.70	1.04	0.68	0.12	0.79	0.53
BRA	0.85	0.16	1.05	0.87	0.95	0.47	0.41	0.98	0.71	0.16	1.55	0.95

	1.08	0.47	0.86	0.72	1.68	0.41	0.60	0.93	0.70	0.17	1.24	1.65
BOL	1.00	0.28	2.74	3.07	7.92	0.59	0.48	0.65	1.15	0.18	1.43	9.40
	1.34	0.26	2.06	2.25	18.52	0.81	0.90	0.78	1.27	0.30	1.07	14.77
COL	0.70	0.43	1.06	1.46	0.99	0.53	0.52	0.69	0.85	0.13	0.70	0.92
	0.82	0.51	0.89	1.16	0.96	0.57	0.61	0.95	0.81	0.15	0.59	0.97
ECU	0.66	0.46	1.42	2.03	1.33	0.42	0.65	0.74	1.06	0.10	1.60	1.03
	1.19	0.39	1.20	1.56	1.63	0.31	0.79	0.84	1.25	0.28	1.87	1.21
PER	0.74	0.69	1.51	1.62	1.35	1.05	0.49	1.07	0.94	0.19	1.27	1.03
	1.00	0.79	1.28	1.01	0.93	1.24	0.49	0.85	0.75	0.18	0.67	0.97
PRY	1.54	0.25	2.99	2.62	0.91	0.29	0.59	0.57	1.97	0.31	2.50	0.81
	1.27	0.18	1.59	1.45	0.83	0.26	0.93	0.81	1.61	0.32	1.32	0.81
URY	1.05	1.11	2.01	2.43	1.02	1.36	0.73	1.39	1.01	0.12	1.23	0.80
	0.92	1.25	1.35	1.78	1.06	0.88	0.77	0.68	0.95	0.19	1.11	0.75
Central America												
CRI	0.87	0.51	1.50	1.84	1.20	0.72	0.36	0.89	1.13	0.19	1.16	1.38
	1.09	0.67	1.19	1.46	1.13	0.74	0.63	1.56	1.17	0.27	0.95	1.41
GTM	1.13	0.63	2.20	2.37	1.43	0.52	0.51	0.63	1.41	0.24	1.90	1.37
	1.57	0.76	1.58	1.81	1.68	0.66	1.07	0.81	1.43	0.42	1.54	1.90
HND	1.59	0.96	2.78	2.56	1.87	1.05	0.64	0.60	1.87	0.41	2.84	2.47
	1.38	1.19	1.86	2.11	1.42	1.14	1.18	0.90	1.84	0.49	1.59	2.09
SLV	0.88	0.68	1.43	2.60	1.21	0.53	0.47	0.48	1.28	0.20	1.28	1.83
	1.19	0.98	1.36	2.63	1.32	0.80	0.98	0.80	1.28	0.30	1.40	1.89
Asia												
CHN	1.67	0.23	0.55	0.42	0.51	0.59	2.20	1.40	0.47	0.06	0.78	0.37
	1.18	0.51	0.49	0.52	0.42	0.56	1.67	1.41	0.47	0.07	0.82	0.36
IDN	1.20	1.11	1.71	1.02	2.09	1.93	2.15	1.27	1.20	0.30	2.46	2.84
	1.56	1.36	1.19	0.93	3.02	1.54	2.06	0.77	1.18	0.36	1.59	2.88
IND	0.44	0.32	0.65	0.70	1.29	4.66	0.46	0.47	0.70	0.09	1.79	0.73
	0.52	1.17	0.63	0.63	0.55	3.43	0.70	0.65	0.55	0.10	1.34	0.58
JPN	1.54	1.17	0.84	0.74	1.14	1.14	0.51	0.68	0.86	0.10	1.48	0.78
	1.01	1.44	0.86	0.59	0.96	0.78	0.50	0.71	0.72	0.10	1.79	0.65
PAK	1.21	0.88	1.68	1.19	2.32	1.86	0.73	0.82	0.98	0.18	2.35	0.92
	1.44	1.48	1.11	1.08	1.19	1.36	1.36	0.87	0.96	0.38	1.77	1.24
PHL	0.46	0.23	0.79	0.64	0.71	0.98	0.25	1.24	0.55	0.19	0.77	1.01
	0.68	0.72	0.73	0.75	0.98	3.15	0.52	0.81	0.58	0.44	0.96	2.79
SGP	0.85	0.33	1.07	0.66	1.49	0.60	0.33	1.30	0.98	0.14	1.22	0.58
	1.36	0.56	1.00	0.71	0.84	0.63	0.90	1.31	1.18	0.35	1.27	0.63
THA	0.97	0.29	0.71	0.75	1.08	1.05	0.40	1.35	0.48	0.05	1.04	0.53
	0.79	0.77	0.71	0.74	1.32	1.31	0.45	1.22	0.54	0.06	1.02	0.85
Other countries												
AUS	0.78	0.48	0.98	0.93	0.82	1.28	0.35	0.70	0.87	0.11	0.79	0.56
	0.98	0.72	1.11	0.80	0.82	1.82	0.53	0.89	1.07	0.17	0.83	0.72
BGR	0.59	0.81	1.07	1.47	0.89	0.87	0.43	1.12	0.80	0.08	0.60	0.81
	0.78	1.14	1.14	1.32	0.82	0.76	0.53	0.74	0.78	0.12	1.05	0.85
BLR	1.03	1.61	1.55	1.12	1.36	1.60	0.71	1.60	0.86	0.12	1.95	1.40
	0.95	1.60	1.08	1.46	1.50	0.65	0.61	0.58	0.98	0.12	2.24	1.29
CIV	0.84	0.58	1.96	1.03	3.62	5.66	0.42	0.77	0.66	1.23	1.38	7.26
	0.82	1.30	1.60	0.97	6.55	7.98	0.41	0.63	0.68	0.91	0.95	8.68
DZA	0.60	2.13	2.18	1.05	1.16	2.74	0.97	2.82	0.78	0.14	0.64	1.38
	0.73	1.60	1.34	1.01	0.77	2.09	0.66	1.01	0.73	0.11	0.34	1.14
EGY	0.91	1.00	1.08	1.03	1.74	2.38	7.99	1.23	0.59	0.10	0.96	1.19
	1.23	1.11	0.93	1.33	1.03	1.90	2.74	0.64	0.60	0.17	1.04	0.87
HRV	0.82	0.85	1.29	2.00	1.41	0.91	0.69	1.08	1.17	0.11	1.33	1.46

0.98	1.26	1.32	2.00	1.43	0.96	0.75	0.84	1.17	0.17	0.95	1.30

ISR	0.61	0.65	0.97	0.93	0.58	2.72	0.36	1.14	0.60	0.10	0.80	0.48
	0.84	1.18	0.96	1.03	0.68	1.71	0.50	0.75	0.70	0.13	0.70	0.70
ISL	3.14	1.90	1.74	1.55	1.50	3.93	21.87	1.11	1.65	0.20	1.51	1.76
	2.12	1.49	1.48	1.53	1.44	12.71	39.45	0.96	1.61	0.30	0.92	1.71
RUS	0.97	2.52	1.90	2.38	1.32	3.60	10.20	2.29	2.08	0.17	0.55	2.11
	0.82	1.70	1.19	2.29	1.28	1.82	4.26	1.10	1.86	0.09	0.25	1.75
NZL	1.00	0.90	1.52	1.61	1.11	1.44	5.13	1.02	1.40	0.16	1.02	1.16
	1.08	1.34	1.46	1.66	1.26	1.69	3.88	0.86	1.47	0.22	0.83	1.31
TUR	0.99	0.13	0.65	0.69	0.52	1.70	0.33	0.65	0.46	0.09	1.32	0.51
	1.19	0.38	0.70	0.73	0.50	1.11	0.71	0.63	0.60	0.16	1.08	0.54

Source: Own calculations from UN Comtrade (2012).
Note: Exporting countries listed in columns.

Table 7: Product complementarity for CARICOM's extra-regional trade ($C_{ij}>1$ for either 2001-2005 to 2006-2010)						
CARICOM	Partner	Description	SITC code	01-05	06-10	Δ
BHS	CHN	Polymers of styrene	572	1.23	0.75	-
BHS	HND	Petroleum products	334	0.88	1.06	*
BHS	ISL	Crustaceans	036	1.91	0.84	-
BLZ	DZA	Sugars, molasses and honey	061	1.82	1.25	*
BLZ	BLR	Sugars, molasses and honey	061	1.02	0.25	-
BLZ	ISL	Crustaceans	036	1.25	0.65	-
BLZ	RUS	Sugars, molasses and honey	061	1.54	0.46	-
BRB	HND	Petroleum products	334	1.18	0.60	-
DMA	BOL	Soap, cleaners, polish etc.	554	1.35	1.16	*
DMA	CYP	Soap, cleaners, polish etc.	554	0.92	1.12	+
DMA	SLV	Soap, cleaners, polish etc.	554	1.28	1.49	+
DMA	GTM	Soap, cleaners, polish etc.	554	1.13	0.90	-
DMA	HND	Soap, cleaners, polish etc.	554	1.19	0.97	-
DMA	RUS	Fruit and nuts, fresh or dried	057	0.99	1.03	+
DMA	URY	Soap, cleaners, polish etc.	554	1.22	0.99	-
GRD	BOL	Meal, flour of wheat, MSLN	046	6.81	17.62	+
GRD	BRA	Meal, flour of wheat, MSLN	046	0.16	1.16	+
GRD	CIV	Meal, flour of wheat, MSLN	046	1.66	4.57	+
GRD	CIV	Fish, fresh, chilled or frozen	034	1.20	1.52	+
GRD	IDN	Meal, flour of wheat, MSLN	046	1.10	2.26	+
GRD	PAK	Spices	075	1.77	0.62	-
GUY	DZA	Sugars, molasses and honey	061	2.27	1.50	*
GUY	AUS	Gold, non-monetary	971	0.88	1.38	+
GUY	BLR	Sugars, molasses and honey	061	1.26	0.31	-
GUY	CIV	Rice	042	4.56	7.37	+
GUY	ISL	Aluminum ore, conctr. Etc.	285	2.70	11.78	+
GUY	IND	Gold, non-monetary	971	3.63	2.95	*
GUY	IDN	Sugars, molasses and honey	061	1.12	0.89	-
GUY	ISR	Pearls and precious stones	667	1.92	0.83	-
GUY	PAK	Sugars, molasses and honey	061	0.98	1.00	+
GUY	PHL	Rice	042	0.60	2.64	+
GUY	RUS	Aluminum ore, conctr. Etc.	285	1.26	0.87	-
GUY	RUS	Sugars, molasses and honey	061	1.90	0.56	-
GUY	TUR	Gold, non-monetary	971	1.41	0.78	-

GUY	URY	Sugars, molasses and honey	061	1.10	0.63	-
JAM	ARG	Aluminum ore, conctr. Etc.	285	4.25	2.30	*
JAM	CAN	Aluminum ore, conctr. Etc.	285	2.14	1.85	*
JAM	CHN	Aluminum ore, conctr. Etc.	285	1.98	1.31	*
JAM	EGY	Aluminum ore, conctr. Etc.	285	7.51	2.01	*
JAM	ISL	Aluminum ore, conctr. Etc.	285	21.31	38.58	+
JAM	IDN	Aluminum ore, conctr. Etc.	285	1.43	0.90	-
JAM	IRL	Aluminum ore, conctr. Etc.	285	1.21	0.89	-
JAM	NZL	Aluminum ore, conctr. Etc.	285	4.62	3.12	*
JAM	RUS	Aluminum ore, conctr. Etc.	285	9.25	3.74	*
JAM	SVK	Aluminum ore, conctr. Etc.	285	2.04	0.98	-
JAM	SVN	Aluminum ore, conctr. Etc.	285	2.88	2.46	*
KNA	DZA	Sugars, molasses and honey	061	1.84	0.00	-
KNA	BLR	Sugars, molasses and honey	061	1.04	0.00	-
KNA	CRI	Electric switch, relay, circuit	772	0.52	1.17	+
KNA	HUN	Electric switch, relay, circuit	772	1.33	0.89	-
KNA	MEX	Electric switch, relay, circuit	772	1.49	1.10	*
KNA	RUS	Sugars, molasses and honey	061	1.63	0.00	-
LCA	RUS	Fruit and nuts, fresh or dried	057	1.15	0.80	-
SUR	CIV	Rice	042	1.13	0.83	-
TTO	BLR	Natural gas	343	0.79	1.30	+
TTO	CYP	Petroleum products	334	0.88	1.15	+
TTO	GTM	Petroleum products	334	1.20	1.08	*
TTO	HND	Petroleum products	334	1.98	1.19	*
TTO	IDN	Petroleum products	334	1.30	0.97	-
TTO	PAK	Petroleum products	334	1.41	1.02	*
TTO	PRY	Petroleum products	334	1.70	0.87	-
VCT	BOL	Meal, flour of wheat, MSLN	046	8.71	13.87	+
VCT	CIV	Rice	042	4.56	5.40	+
VCT	CIV	Meal, flour of wheat, MSLN	046	2.05	2.62	+
VCT	IDN	Meal, flour of wheat, MSLN	046	1.34	1.76	+
VCT	PHL	Rice	042	0.58	1.87	+
VCT	RUS	Fruit and nuts, fresh or dried	057	1.27	0.89	-

Source: Own calculations from UN Comtrade (2012).

Notes: * means that trade complementarity has declined but remained above one (1).

+ means that trade complementarity has improved from below one (1) to above one (1).

- means that trade complementarity has declined from above one (1) to below one (1).

5.5 Dominance of Special Country Bias

The results from the trade bias indices are reported in Table 8. The trade bias index account for all trade determining factors that are not associated with the comparative advantage (disadvantage) profiles of trading partners and is an important component in explaining the overall intensity of bilateral trade among countries. The intensity of intra-CARICOM trade is

characterized by an extremely high level of trade bias for the majority of the bilateral trade relations among member countries. The influence of trade bias has increased significantly in relation to the level of trade complementarity over the last two decades (see Table 8). One exception is The Bahamas, where the structure of trade bias is lower relative to other members of the CARICOM. The largest trade bias among CARICOM countries is associated with the smaller countries in the region namely members of the OECS.

Table 8: Trade bias indies for CARICOM countries and their trading partners (2001-2005 to 2006-2010)

	BHS	BLZ	BRB	DMA	GRD	GUY	JAM	KNA	LCA	SUR	TTO	VCT
BHS		2.4	11.4	3.0	0.7	0.8	7.0	1.4	4.2	2.1	11.4	0.1
		0.1	16.8	5.2	0.3	1.8	4.3		1.3	0.1	5.8	1.3
BLZ	0.4		39.3	116.6	8.4	65.1	76.1		23.0	0.6	10.0	0.1
	3.3		40.4	43.2	1.0	22.4	37.4	22.0	25.3	0.3	8.1	0.8
BRB	2.6	29.8		102.4	154.2	122.1	49.2	7.4	309.6	294.3	187.6	340.0
	2.8	26.1		112.1	254.7	152.2	43.0	41.3	304.3	1159.8	297.1	361.3
DMA	0.5	11.0	229.4		156.3	63.9	106.3	198.0	1349.7	8.5	98.8	206.2
	1.4	69.8	268.2		516.3	82.9	52.7	469.6	1328.2	6.3	105.3	249.3
GRD	1.8	1.5	286.7	92.3		76.9	46.4	20.5	773.6	3.2	219.1	601.9
	0.6		339.4	155.6		82.1	34.4	179.9	547.6	6.4	235.8	1611.7
GUY	0.1	42.5	111.4	307.4	87.7		42.5	2.5	67.5	1344.2	93.6	42.2
	0.2	61.2	160.6	239.2	54.4		21.1	6.6	48.8	941.8	108.7	30.8
JAM	3.5	49.0	48.7	217.2	19.6	51.9		0.2	5.5	14.3	44.6	30.6
	6.0	25.6	56.6	206.9	26.5	44.6		0.5	10.6	19.8	51.5	20.8
KNA	3.3	0.6	299.7	451.6	444.2	35.2	70.0		272.1		118.2	201.3
	6.2		276.3	645.9	497.8	98.9	54.1		200.5	6.5	203.7	386.8
LCA	2.1	4.0	298.7	282.6	193.6	71.9	51.9	22.8		2.5	109.1	206.5
	0.3		378.1	260.6	230.3	78.5	28.6	171.0		25.0	104.1	420.6
SUR	0.4	2.2	74.9	145.1	4.0	103.6	12.9		10.7		95.3	2.4
		2.4	63.0	145.8	3.6	93.6	12.0		3.9		151.2	16.8
TTO	1.0	69.7	146.5	111.5	56.1	87.1	52.8	19.9	260.8	80.6		116.9
	1.7	24.5	183.5	130.9	64.4	78.7	32.6	19.1	560.1	335.2		214.1
VCT		0.7	373.4	166.5	375.4	64.3	42.2	36.7	789.3	15.6	167.6	
	0.2	1.8	466.3	205.3	612.6	59.4	32.6	217.4	681.6	4.6	146.5	
Non-CARICOM countries												
AUS	0.58	0.01	0.09			0.06	0.19	0.01	0.00	0.04	0.04	0.00
	0.32	0.00	0.03		0.04	0.04	0.03	0.00	0.01	0.06	0.05	0.05
BEL	0.04	0.01	0.04		1.62	1.36	0.05		0.00	24.03	0.08	0.00
	0.00	0.12	0.02	0.00	0.80	1.23	0.03		0.00	31.34	0.14	0.00
BRA	0.20	0.23	0.03	0.04	0.34	0.14	0.25	0.00	0.05	8.37	0.58	0.03
	0.26	0.01	0.09	0.00	0.00	0.28	0.06	0.07	0.04	3.11	0.70	0.01
CAN	1.06	0.32	0.72	0.05	0.59	6.51	2.17	0.18	0.11	23.81	0.84	0.12

	1.80	0.09	0.85	0.03	0.92	5.57	2.00	0.04	0.07	60.18	0.66	0.07
CHN	0.00	0.02	0.07	0.00	0.03	0.11	0.55	0.00	0.06	1.42	0.01	0.03
	0.07	0.03	0.19	0.01	0.14	0.42	0.28	0.00	0.10	1.36	0.04	0.02
COL	0.01	0.05	0.13		1.58	1.53	0.84		0.05	0.35	6.70	0.12
	0.00	0.00	0.41	1.51	0.27	1.17	0.32		0.02	0.68	11.90	0.02
CRI	0.03	0.16	0.38	0.06	0.10	0.28	0.50	0.02	0.22	0.24	1.08	0.27
	0.04	159.47	0.48	0.04	0.32	0.14	0.36	0.57	0.22	0.13	6.68	
DEU	0.99	0.02	0.06	0.02	0.79	0.14	0.67	0.01	0.07	0.20	0.02	0.00
	0.51	0.02	0.12	0.00	0.39	0.42	0.44	0.01	0.02	0.24	0.08	0.01
DNK	0.01	0.15	0.08		0.10	0.07	0.08	0.04	0.00	0.12	0.13	
	0.01	0.02	0.05	0.24	0.00	0.01	0.06	0.06	0.00	0.03	0.01	
ECU	0.01		0.05			0.83	0.39		0.01	0.28	0.79	0.03
	0.04		0.04			1.31	0.07			0.19	0.38	
ESP	0.56	0.19	0.23		0.09	0.12	0.02		0.00	0.30	0.31	0.00
	0.06	0.31	0.02	0.00	0.00	0.25	0.02		0.00	0.91	1.41	0.01
FRA	1.97	0.03	0.26	1.30	0.74	0.44	0.98	0.03	0.28	0.90	0.81	0.14
	1.11	0.04	0.23	2.04	1.23	0.53	0.96	0.21	0.32	2.69	0.44	0.06
GBR	0.95	6.52	2.05	2.77	0.39	3.54	4.21	3.78	4.68	0.21	0.43	4.88
	0.85	4.74	2.03	2.03	0.26	4.42	2.79	0.73	3.05	0.05	0.67	2.75
GRC	0.12	0.02	0.09			0.21	0.00		0.01	0.03	0.09	0.00
	0.09	0.06	0.23			0.00	0.01		0.12	0.00	0.19	0.00
GTM	0.41	8.31	0.08	0.10		0.07	1.25			0.58	4.21	0.01
	1.17	17.72	0.05	0.06		0.30	0.35	0.04		0.23	1.34	0.00
HND	0.30	4.58	0.08			0.17	4.62	0.01	0.98	0.12	5.77	
	0.34	2.00	0.16			0.10	0.69		0.15	0.03	3.30	0.06
IND	0.03	0.03	0.02	0.00	0.04	0.12	0.16	0.01	0.10	10.13	0.04	
	0.01	0.00	0.27		0.05	0.16	0.03		0.27	0.21	0.19	
ITA	0.10	0.14	0.15		0.04	0.06	0.02	0.00	0.02	0.07	0.10	0.01
	0.02	0.01	0.10		0.07	0.10	0.02	0.00	0.04	0.05	0.06	0.10
JPN	0.02	1.81	0.01	0.02	0.16	0.02	0.79	0.14	0.07	0.03	0.10	0.00
	0.04	0.26	0.01	0.01	1.82	0.19	0.65	0.09	0.01	0.27	0.04	0.01
MEX	0.14	3.36	0.04	0.00	0.03	0.19	0.50	0.00	0.01	0.19	1.51	0.00
	0.18	3.49	0.09	0.01	0.02	0.35	0.23	0.00	0.03	0.04	1.05	0.00
NLD	0.02	5.12	0.23	0.00	3.83	1.87	3.09	0.01	0.02	10.54	0.26	0.03
	1.50	1.39	0.11	0.02	1.11	2.66	2.47	0.00	0.04	6.11	0.57	0.01
PER	0.03	0.09	0.02		0.01	0.19	0.96			10.54	0.83	
	0.18	0.00	0.02	0.00		0.09	0.73		0.52	0.03	1.43	0.00
SLV	0.35	1.54	0.16	0.06		0.18	0.23		1.21	0.22	4.28	
	0.40	10.67	0.37		0.01	0.06	0.12	1.05	0.02	0.13	0.72	0.01
THA	0.00	0.94	0.04	0.00	0.00	0.05	0.06	0.01	0.05	0.21	0.00	0.00
	0.00		0.05	0.01	0.00	0.05	0.20	0.01	0.06	0.19	0.00	0.00
USA	4.52	7.73	1.05	0.62	1.87	1.68	2.23	5.98	0.97	1.17	3.25	0.65
	5.42	2.71	1.51	0.41	1.64	1.54	3.89	6.31	1.52	2.10	4.11	0.46

Source: Own calculations from UN Comtrade (2012).
Note: Exporting countries listed in columns.

Similar trends emerge for CARICOM's extra-regional trade. Specifically, the trade bias indices for CARICOM countries in relation to non-CARICOM countries are relatively lower but are relatively strong in relation to the intensity of bilateral trade. Most CARICOM countries appear

to have high trade biases with extra-regional partners such as the United Kingdom, Netherlands, USA and Canada when compared to other countries such as China, Japan, Thailand, Mexico and Brazil. The varying levels of trade bias for intra-CARICOM trade versus some extra-CARICOM trade relations can be explained by special country effects. In particular, heavy trade bias in the regional market may be strongly influenced by geography, regional integration, similar preference structure and other historical and socio-political factors. The relatively high trade bias with countries such as the United Kingdom, Netherlands, Canada and the USA may have been influenced by non-reciprocal preferential trade agreements in the form of the Lomé Conventions and colonial links in the case of the former, CARIBCAN and the CBI, respectively. These results infer that CARICOM's trade intensity is dominated by trade bias rather than strong trade complementarity.

5.6 CARICOM's Trade Intensity

The structure of trade intensity between two countries is determined by the product of their structure of trade complementarity and their structure of trade bias. The results from the trade intensity index are reported in Table 9. The results reveal that the value of the trade intensity index is significantly over one (1) in the case of bilateral trade among CARICOM countries and below one (1) for most of CARICOM's trade with non-CARICOM countries. This difference infers that CARICOM countries enjoy an intensive bilateral trading relationship when compared to their trade with non-CARICOM countries. These results are interesting as the value of intra-CARICOM's trade is much lower than extra-CARICOM trade. A possible reason for this trend is that most CARICOM countries are not large importers compared to their non-CARICOM

counterparts, which manifest itself into a relatively high intensive trading relationship even in the presence of low intra-CARICOM exports. The value of the bilateral trade intensity index for most CARICOM countries has been on the rise with the exception of The Bahamas relative to other CARICOM members.

The trade intensity index is only computed for CARICOM countries trade with a few non-CARICOM countries due to the unavailability of data. In the case of NAFTA countries, Trinidad and Tobago, The Bahamas, Belize, Grenada and St. Kitts and Nevis all observed trade intensity indices over one (1) with the USA for most of the period. Guyana, Jamaica and Suriname also observed a relatively high level of trade intensity with Canada. With the exception of Belize in the last 5 years no other CARICOM member reveals an intensive trading relationship with Mexico. CARICOM countries also reported an intensive trading relationship with United Kingdom throughout the period. On the other hand, Belize, Grenada and Jamaica reported trade intensity indices above one (1) with the Netherlands, while Suriname and Guyana reported a growing intensity of trade especially in the latter period with Belgium. A relatively high intensity of trade for Trinidad and Tobago and Belize in relation to other countries such as Costa Rica, Colombia, El Salvador, Guatemala, and Honduras is observed for the period. In addition, Belize is the only CARICOM member to reveal an intensive trading relationship with the latter three. Trade intensity indices for CARICOM countries and their other non-CARICOM counterparts are consistently below the one (1) for the last two decades. From these results (Table 9) it appears that high trade intensity is associated with country pairs that are in geographic proximity, share some socio-political history or where there exists some form of preferential trade agreement or both in the case of CARICOM.

	BHS	BRB	BLZ	DMA	GRD	GUY	JAM	KNA	LCA	VCT	SUR	TTO
Table 9: Trade intensity indies for CARICOM countries and their trading partners (2001-2005 to 2006-2010)											

Table 9: Trade intensity indies for CARICOM countries and their trading partners
(2001-2005 to 2006-2010)

	BHS	BRB	BLZ	DMA	GRD	GUY	JAM	KNA	LCA	VCT	SUR	TTO
BHS		36.7	3.6	8.8	1.6	1.0	6.5	1.8	10.8	0.4	0.7	24.8
		41.9	0.2	15.4	0.9	2.4	7.4		3.5	4.7	0.0	10.5
BRB	3.4		44.1	305.4	306.6	229.1	50.4	11.8	654.3	789.7	86.6	284.2
	2.8		54.3	348.5	617.8	354.4	53.8	56.3	853.0	1060.0	266.8	290.2
BLZ	0.4	115.1		246.0	9.7	22.3	41.7		36.5	0.1	0.2	20.6
	4.4	104.0		81.0	1.4	11.0	46.8	16.8	54.4	1.0	0.1	13.6
DMA	0.9	1040.1	19.5		1653.7	141.8	117.3	389.7	2861.6	2537.4	3.2	205.5
	2.4	886.3	111.0		7783.1	177.1	83.9	625.0	3226.5	3240.0	2.9	166.9
GRD	2.1	960.8	4.0	218.7		147.0	38.3	14.3	1071.8	1123.9	1.2	317.5
	0.8	1133.7	0.0	394.0		207.5	44.3	207.1	1174.9	3920.8	2.2	283.9
GUY	0.3	361.5	39.3	884.9	168.3		33.1	2.8	121.6	52.6	453.1	298.7
	0.5	371.1	48.7	643.0	204.3		37.2	6.9	103.4	113.6	553.3	242.7
JAM	3.4	134.4	85.2	409.6	33.9	122.6		0.3	9.4	60.1	6.1	131.6
	9.5	117.3	56.7	380.7	43.6	113.6		0.5	17.8	47.1	12.0	133.3
KNA	3.8	784.2	510.9	1162.3	1009.9	30.1	47.4		384.7	1323.4	0.3	179.6
	5.5	1015.9	2.9	1690.8	3130.3	122.7	52.4		573.1	1858.3	1.5	170.1
LCA	2.0	1012.9	437.9	612.4	1136.3	128.7	48.1	101.8		1683.4	0.6	251.1
	2.6	1326.8	1.3	906.5	2130.1	155.7	45.8	137.1		3193.5	11.1	174.4
VCT		1517.6	1.5	501.4	669.8	203.3	41.2	44.2	1300.6		7.0	269.0
	0.2	1558.6	3.6	606.7	1378.9	197.2	51.8	267.1	1496.4		3.0	211.2
SUR	0.4	203.3	2.6	187.9	14.6	139.8	9.4		13.5	13.2		190.1
		126.4	2.7	176.6	30.6	120.8	18.2		6.9	106.6		242.8
TTO	0.8	211.9	67.2	121.1	87.4	97.3	25.7	15.2	244.6	216.5	13.6	
	1.0	246.4	56.0	174.6	78.5	86.5	22.0	14.8	461.6	311.8	47.2	
Non-CARICOM countries												
AUS	0.44	0.09	0.01			0.07	0.06	0.01	0.01	0.00	0.00	0.03
	0.32	0.04	0.00		0.03	0.06	0.02	0.00	0.01	0.04	0.01	0.04
BEL	0.04	0.05	0.02		1.35	1.83	0.03		0.00	0.01	2.57	0.09
	0.00	0.03	0.14	0.00	0.82	1.04	0.03		0.01	0.00	4.40	0.17
BRA	0.16	0.03	0.02	0.03	0.33	0.06	0.12	0.00	0.04	0.02	0.94	0.89
	0.28	0.08	0.00	0.00	0.00	0.12	0.04	0.05	0.03	0.02	0.40	0.88
CAN	0.94	0.68	0.10	0.07	0.53	6.25	5.33	0.17	0.12	0.12	2.35	0.52
	1.61	0.93	0.10	0.05	0.88	8.81	4.68	0.04	0.09	0.09	7.29	0.42
CHN	0.00	0.04	0.00	0.00	0.01	0.07	1.24	0.00	0.02	0.01	0.08	0.01
	0.08	0.09	0.02	0.00	0.06	0.23	0.59	0.00	0.05	0.01	0.10	0.03
COL	0.01	0.14	0.02		1.59	0.67	0.44		0.04	0.12	0.04	4.63
	0.00	0.35	0.00	1.60	0.25	0.62	0.19		0.01	0.02	0.09	6.98
CRI	0.02	0.59	0.13	0.12	0.11	0.19	0.17	0.02	0.24	0.40	0.05	1.25
	0.04	0.50	109.18	0.07	0.48	0.10	0.25	0.89	0.25		0.04	6.24
DEU	0.66	0.06	0.02	0.02	0.65	0.08	0.47	0.01	0.08	0.00	0.02	0.02
	0.37	0.10	0.02	0.00	0.31	0.22	0.28	0.01	0.02	0.01	0.02	0.09
DNK	0.02	0.11	0.22		0.20	0.07	0.04	0.04	0.00		0.01	0.14
	0.01	0.07	0.03	0.36	0.01	0.01	0.03	0.06	0.00		0.01	0.00
ECU	0.01	0.07				0.33	0.23		0.01	0.03	0.03	1.10
	0.05	0.05				0.42	0.06				0.09	0.68
ESP	0.95	0.25	0.16		0.11	0.14	0.02		0.00	0.00	0.03	0.34
	0.09	0.02	0.43	0.00	0.01	0.22	0.02		0.01	0.01	0.10	1.76
FRA	1.89	0.28	0.03	1.87	0.83	0.30	0.77	0.03	0.32	0.16	0.10	0.85
	1.10	0.27	0.05	2.72	1.35	0.34	0.74	0.17	0.35	0.07	0.38	0.49
GBR	0.73	2.25	3.90	3.59	0.32	3.01	2.22	3.43	6.43	5.59	0.03	0.24
	0.73	2.56	5.41	2.86	0.26	3.58	2.13	0.69	4.54	3.29	0.01	0.51

GRC	0.14	0.11	0.03			0.13	0.00		0.01	0.00	0.00	0.11
	0.11	0.30	0.08			0.00	0.01		0.14	0.01	0.00	0.21
GTM	0.49	0.18	4.42	0.29		0.04	0.63			0.01	0.13	8.32
	1.80	0.06	13.69	0.14		0.20	0.37	0.04		0.00	0.08	2.10
HND	0.50	0.27	5.81			0.19	2.67	0.01	1.68		0.04	16.52
	0.59	0.26	2.13			0.13	0.82		0.30	0.11	0.02	5.11
IND	0.02	0.01	0.01	0.00	0.05	0.53	0.09	0.00	0.06		0.90	0.08
	0.01	0.13	0.00		0.03	0.48	0.02		0.14		0.02	0.24
ITA	0.12	0.12	0.07		0.03	0.07	0.02	0.00	0.02	0.01	0.01	0.07
	0.03	0.09	0.01		0.05	0.10	0.01	0.00	0.03	0.07	0.00	0.05
JPN	0.02	0.01	0.68	0.02	0.19	0.03	0.41	0.10	0.06	0.01	0.00	0.11
	0.04	0.01	0.37	0.00	1.80	0.15	0.33	0.06	0.01	0.01	0.03	0.08
MEX	0.11	0.04	0.81	0.00	0.04	0.08	0.17	0.01	0.01	0.00	0.02	1.08
	0.19	0.07	1.24	0.01	0.02	0.18	0.12	0.00	0.03	0.00	0.00	0.82
NLD	0.02	0.21	1.66	0.01	4.75	0.97	2.57	0.01	0.02	0.04	1.12	0.26
	1.24	0.10	1.55	0.03	1.42	1.48	2.10	0.00	0.05	0.01	0.99	0.46
PER	0.03	0.04	0.08		0.01	0.20	0.46				2.01	1.09
	0.16	0.03	0.00	0.00		0.13	0.31		0.26	0.00	0.00	0.43
SLV	0.33	0.21	1.14	0.16		0.10	0.11		1.42		0.04	5.64
	0.47	0.51	9.99		0.02	0.05	0.12	0.77	0.03	0.03	0.03	1.03
THA	0.00	0.03	0.06	0.00	0.00	0.05	0.03	0.01	0.03	0.00	0.01	0.00
	0.00	0.03		0.01	0.00	0.06	0.09	0.02	0.03	0.00	0.01	0.00
USA	4.18	0.91	2.91	0.35	1.60	1.25	1.56	4.38	0.96	0.41	0.11	3.18
	5.15	1.56	3.03	0.25	1.37	1.11	2.99	5.91	1.58	0.33	0.26	3.75

Source: Own calculations from UN Comtrade (2012).
Note: Exporting countries listed in columns.

5.7 Reasons for Low Trade Complementarity and Implications

These results have implications for the ongoing debate about the economic benefits associated with deeper CARICOM integration and extra-CARICOM FTAs. One of the principal reasons cited for the establishment of the CARICOM is that regional integration would have laid the foundation for the growth in trade among CARICOM members. However, a prerequisite for expanding trade among CARICOM countries' given their small size is a strong element of industrial linkages and product fragmentation across CARICOM economies; this would have engineered a higher level of trade complementarity and higher intra-CARICOM trade. Yet, there is no evidence that this development occurred based on the trade complementarity analysis. In

fact, the trade complementarity indices indicate that trade complementarity for manufactured and high value added products are non-existent among CARICOM countries.

Additionally, the trade complementarity index indicates that the level of trade structure convergence between the CARICOM region and its proposed FTA partners is low and appears to be weakening over time. One would have expected that trade structures between CARICOM countries and countries in the EU, Canada and the USA would have converged based on the duty free access that the CARICOM countries have received in the latter economies. CARICOM firms obtaining access to develop markets should have increased their competitiveness through economies of scale benefits on account of a larger export market and other productivity spillovers. Clearly convergence in trade structures along the lines of trade complementarity and the natural trading partner hypothesis did not occur. These results infer that the non-reciprocal trade preferences offered to CARICOM may have acted as a stumbling block to CARICOM countries engagement in the multilateral trading system in diverse products (see Bjørnskov and Krivonos 2001 for details on CARICOM's non-reciprocal trade preferences with the EU). Consequently, other countries (other supply sources) are relatively more efficient suppliers of similar products than CARICOM countries to their proposed FTA partners, implying that CARICOM products are more likely to be displaced when preferential access are removed. There are several possible factors that can explain why trade complementarity and intra-regional trade among CARICOM economies have remained low, some of these include:

1. Market integration: Regional integration among CARICOM economies focused mainly on widening the market by reducing trade barriers to facilitate the expansion of intra-regional

trade. However, most of the productive structures in the region are not developed to take advantage of the commercial opportunities that a relatively larger protected market provides. This type of 'shallow' integration may have played a role in limiting the development of complementarity in trade and production for high value added sectors.

2. Historical trade patterns and non-reciprocal trade preferences: The trade preferences that permitted CARICOM economies exports to developed countries may have also reinforced an agrarian/low value added type of production in the CARICOM region. In fact, many of these non-reciprocal trade agreements provided duty free market access for exports of raw materials and agricultural products from CARICOM economies. It is possible that these non-reciprocal trade preferences from developed countries would have dominated the policy space of CARICOM economies, with little attention on developing stronger south-south relations where trade complementarity is stronger.

3. Product fragmentation: The inability of many CARICOM countries to develop capital intensive technologically driven industries could have contributed to a regional production structure that has little product fragmentation across countries. The failure of CARICOM economies to exploit complementarities in natural resources and agricultural products would have hindered the expansion of industrial linkages in the region and weakened the competitiveness of the manufacturing base.

4. Smallness: The relatively small size of the CARICOM markets is a limiting factor to firms which would otherwise benefit from the productivity gains associated with trading in a large protected market in the early stages of their development.

5. Foreign Direct Investment: Multinational Corporations investing in the CARICOM region focused mainly on extracting minerals for exports to non-CARICOM economies. This would have also stymied the development of trade complementarity in the manufacturing sector, thus leading to low levels of intra-CARICOM trade.

6. Capital and knowledge: The lack of capital, knowledge and expertise by CARICOM firms to transform raw materials and agricultural products into value added products would have also restricted the growth in the agro-processing sector contributing to low levels of trade complementarity in this sector.

6. Conclusion and Policy Implications

Efficient resource utilization requires that economies export those commodities intensive in the use of their abundant factors of production and import those commodities that call for factor proportions in the opposite direction. In this regard and following the material developed in this paper, trade complementarity emerged as the cornerstone theoretical argument for determining the real natural trading partner of an economy. The results from the application of the trade intensity index model revealed some empirical insights into the determinants of CARICOM's bilateral trade intensity and moreso the need for the region to develop greater complementary or

"natural" trading relationships in the intra-regional and extra-regional markets, especially with its FTA and proposed FTA partners.

Despite the generally low levels of trade complementarity, several important issues relating to CARICOM member's natural trading partners have been identified. In particular, Central America is identified as the most natural trade bloc for the CARICOM region as a whole as well as for the OECS bloc and the MDC bloc. Apart from Central America, the OECS and the MDC do not share the same natural trading partners. The MDCs have a relatively high level of trade complementarity with Asia and the emerging economies when compared to the OECS countries. It is important to note that the CARICOM bloc recorded a low level of trade complementarity with both NAFTA and the EU. These results indicate that CARICOM countries should be engaging in initiatives to strengthen its South-South trade alliances to exploit potential trade complementarities with Central America and Asia. Further research should consider the expansion of CARICOM to include countries from Central America and Latin America.

In terms of the CARICOM bloc, this paper also established that CARICOM economies are "weak" natural trading partners. This categorization is determined by the value of the trade complementarity index and the number of commodities for which CARICOM countries have trade complementarity. A similar classification can be made for CARICOM and some of its extra-regional FTA partners. This classification is supported by the results from the trade intensity index model, which shows that complementarity is dominated by a few primary products and is on the decline in most areas.

The results also revealed that trade complementarity for manufactured products in the CARICOM region did not improve. Several factors may be responsible for this trend such as, the inability of many CARICOM countries to develop capital intensive technologically driven industries, the small size of the CARICOM market, historical trade linkages with Europe and North America.

The level of special country bias is comparatively higher implying that the facilitating conditions for the expansion of trade among CARICOM members and with some non-CARICOM members may be present. However, the lack of comparative advantage in diverse product groups presents a major challenge in boosting intra-CARICOM trade potential. This argument is supported by the empirical evidence outlined in this paper which shows that complementarity at the product level has not changed in the past decade. Furthermore, the paper identified some stylized facts about the structure of CARICOM's trade:

   i.   Trade intensity among CARICOM countries is stronger than trade intensity between CARICOM and the majority of non-CARICOM countries.
  ii.   Trade bias dominates the structure of CARICOM's trade intensity.
 iii.   Product complementarity is concentrated in a few product groups for the most part.
  iv.   Product complementarity with CARICOM's FTAs and proposed FTA partners is low (with marginal improvements), non-existent or declining in most cases.

Given that the concentration of complementarity is in the primary and natural resource intensive sectors, then the promotion of production driven networks are more important than market driven

integration strategies. The focus on market-driven integration in the absence of strong trade complementarity in the past can provide a possible explanation for the low growth of intra-regional trade and low manufacturing exports in the CARICOM region. Additionally, with CARICOM's active extra-regional trade agenda in recent times, these facts can serve well to influence strategies to improve trade in terms of streamlining policy initiatives to take advantage of opportunities associated with trade liberalization.

References

Aggarawal, Mangat R., and Posh R. Pandey. 1992. "Prospects of Trade Expansion in the SAARC Region." *The Developing Economies* 30 (1): 3-21.

Anderson, Kym, and Ross Garnaut. 1985. "Australia's trade growth with developing economies." *The Developing Economies* 23 (2): 121–37.

Anderson, Kym. 1983. "Intensity of Trade between Pacific Basin Countries." Pacific Economic Papers 102, Australia-Japan Research Center, Canberra.

Balassa, Bela. 1965. "Trade Liberalization and Revealed Comparative Advantage." *Manchester School of Economic and Social Studies* 33 (2): 99-123.

Bhagwati, Jagdish, and Arvind Panagariya. 1996. "Preferential Trading Areas and Multilateralism − Strangers, Friends or Foes?" In *The Economics of Preferential Trade Agreements*, edited by Jagdish Bhagwati and Arvind Panagariya, 1-78. Washington D.C.

Bhagwati, Jagdish. 1993. "Regionalism and Multilateralism: An Overview." In *New Dimensions in Regional Integration,* edited by Jaime de Melo and Arvind Panagariya, 22-51, New York, Cambridge University Press.

Bjørnskov, Christian, and Ekaterina Krivonos. 2001. "From Lomé to Cotonou, the new EU-ACP agreement." Working Paper 14, Danish Institute of Agricultural and Fisheries Economics, Denmark.

Chow, Peter, Mitchell Kellman, and Yochanan Shachmurove. 1999. "A test of the Linder hypothesis in Pacific NIC trade 1965-1990." *Applied Economics* 31 (2): 175-82.

Deardorff, Alan V., and Robert M. Stern. 1994. "Multilateral Trade Negotiations and Preferential Trading Arrangements." In *Analytical and Negotiating Issues in the Global Trading System,* edited by Deardorff, A. V. and R. M. Stern, 27-94. Ann Arbor: University of Michigan Press.

Drysdale, Peter D. 1967. "Australian–Japanese Trade." PhD Thesis. Australian National University, Canberra, Australia.

Drysdale, Peter D., and Ross Garnaut. 1982. "Trade Intensities and the Analysis of Bilateral Trade Flows in a Many-Country World: A Survey." *Hitotsubashi Journal of Economics* 22 (2): 62–84.

Drysdale, Peter D., and Xinpeng Xu. 2004. "Taiwan's Role in the Economic Architecture of East Asia and the Pacific." Pacific Economic Papers 343, Australian National University, Australia.

Elliott, Robert J. R., and Kengo Ikemoto. 2004. "AFTA and the Asian Crisis: Help or Hindrance to ASEAN Intra- Regional Trade?" *Asian Economic Journal* 18 (1): 1-23.

Farrell, Trevor. 2001. "Five Major Problems for CARICOM." In *The Caribbean Community: Beyond Survival,* edited by Kenneth Hall, 8-16. Kingston: Ian Randle Publishers.

Feaver, Donald, and Kenneth Wilson. 2005. "Preferential trade agreements and their implications for customs services." Working Paper 05-03, Zayed University, Dubai.

Gil-Pareja, Salvador, Rafael Llorca-Vivero, and Jose Antonio Martínez-Serrano. 2012. "Trade Effects of Continental and Intercontinental Preferential Trade Agreements." *Transformations in Business and Economics* 11 (1): 20-34.

Greenaway, David, and Chris Milner. 1986. *The Economics of Intra-Industry Trade*. Oxford: Blackwell.

Hapsari, Indira M., and Carlos Mangunsong. 2006. "Determinants of AFTA Members' Trade Flows and Potential for Trade Diversion." Working Paper 21, Asia-Pacific Research and Training Network on Trade, Bangkok, Thailand.

Hill, Hal. 1985. "Australia-Philippine Trade Relations." *Journal of Philippine Development* 12 (2): 253-273.

Kemal, Abdul R. 2004. "Exploring Pakistan's Regional Economic Cooperation Potential." *The Pakistan Development Review* 43 (4): 313-334.

Kim, Seung J. 2007. "Korea's trade intensity with her major trading countries in the manufacturing sector: Its changes over the last decade." *International Area Review* 10 (1): 151-174.

Kim, Seung J. 2012. "South Korea's Trade Intensity with ASEAN Countries and Its Changes over Time." *International Review of Business Research Papers* 8 (4): 63–79.

Krishna, Pravin. 2003. "Are Regional Trading Partners 'Natural'?" *Journal of Political Economy* 111 (1): 202–226.

Krueger, Anne O. 1999. "Are Preferential Trading Arrangements Trade-Liberalizing or Protectionist?" *Journal of Economic Perspectives* 13 (4): 105-124.

Krugman, R. Paul. 1991. "The Move Toward Free Trade Zones." *Economic Review* 76 (6): 5-25.

Krugman, R. Paul. 1993. "Regionalism versus Multilateralism: Analytical Notes." In *New Dimension in Regional Integration*, edited by Jamie de Melo and Arvind Panagariya, 58-78. Cambridge: Cambridge University Press.

Lawrence, Robert Z. 1996. *Regionalism, Multilateralism, and Deeper Integration*. Washington D.C.: The Brookings Institution Press.

Lee, Chang-Soo, and Soon-Chan Park. 2006. "An examination of the formation of natural trading blocs in East Asia." *Asian Economic Papers* 4 (1): 90-103.

Lipsey, Richard G. 1960. "The Theory of Customs Unions: A General Survey." *Economic Journal* 70 (September 1960): 496-513.

Magee, Christopher S. P. 2004. "Trade Creation, Trade Diversion, and Endogenous Regionalism." Mimeo. Econometric Society 2004 North American Summer Meetings 289, Econometric Society.

Menon, Jayant. 1996. *Adjusting towards AFTA: The Dynamics of Trade in ASEAN*. Institute of Southeast Asian Studies. Singapore.

Morgan, David J. 1962. "Imperial Preference in the West Indies and in the British Caribbean, 1929-55: A Quantitative Analysis." *The Economic Journal* 72 (285): 104-133.

Nadav, Halevi, and Ephraim Kleiman. 2008. "Middle East Integration and the Barcelona Process." *Agora Without Frontiers* 13 (4): 394-413.

Osimani, Rosa. 2005. "Mercosur-FTAA Trade: Evolution and Perspectives." In *Mercosur and the Creation of the Free Trade Area of the Americas,* edited by Fernando Lorenzo and Marcel Vaillant, 47-75. Washington: Woodrow Wilson Center Report on the Americas.

Panagariya, Arvind. 1999. "The Regionalism Debate: An Overview." *The World Economy* 22 (4): 477-512.

Park, Jong H. 1995. "The New Regionalism and Third World Development." *Journal of Developing Societies* 11 (1): 21-35.

Pitigala, Nihal. 2005. "What Does Regional Trade in South Asia Reveal about Future Trade Integration? Some Empirical Evidence." Working Paper 3497, World Bank Policy Research, World Bank, Washington D.C.

Ramayandi, Areif. 2005. "ASEAN Monetary Cooperation: Issues and Prospects." Pacific Economic Papers 349, Australia National University, Australia.

Sarmad, Khwaja, and Riaz Mahmood. 1988. "Prospects for Expanding Trade between SAARC and ASEAN Countries." *The Pakistan Development Review* 27 (2): 131-136.

Schiff, Maurice. 2001. "Will the Real 'Natural Trading Partner' Please Stand Up?" *Journal of Economic Integration* 16 (2): 245-261.

Shakur, Shamim, and Chris Nees. 2011. "An application of the natural trading partner hypothesis to New Zealand-ASEAN trade." *Economics Bulletin* 31 (4): 3077-3088.

Summers, Lawrence. 1991. "Regionalism and the World Trading System." Paper presented at the *Policy Implications of Trade and Currency Zones.* A symposium sponsored by the Federal Reserve Bank of Kansas City.

Tash Mohim S., Idris B. Jajri, and Mohammad N. S. Tash. 2012. "An Analysis of Bilateral Trade between Iran and D-8 Countries." *Global Journal of Management and Business Research* 12 (2): 26-34.

Thornton, John. 1987. "The nature of Japan's trading relationship with ASEAN countries." *ASEAN Economic Bulletin* 3 (3): 368-378.

Trebilcock, Michael J., and Robert Howse. 2005. *The Regulation of International Trade.* New York: Routledge.

Vollrath, Thomas L. 2003. "North American Agricultural Market Integration and Its Impact on the Food and Fiber System." *Agriculture Information Bulletin* No. 784.

Vollrath, Thomas L., and P. V. Johnston. 2001. "The changing structure of agricultural trade in North America." Paper presented at Annual Meeting of Agricultural and Applied Economics Association, Chicago, August 5–8, 2001.

Weldemicael, Ermias O. 2010. "Bilateral Trade Intensity Analysis." Working Paper, The University of Melbourne, Australia.

Wint, Alvin G. 2005. "The Economic Impact of Caribbean Regional Economic Integration: National Policy and Intra-Regional Performance Differences." In *Caribbean Imperatives: Regional Governance and Integrated Development*, edited by Kenneth Hall and Denis Benn, 135-149. Kingston: Ian Randle Publishers.

Wonnacott, Paul, and Mark Lutz. 1989. "Is There a Case for Free Trade Areas?" In *Free Trade Areas and U.S. Trade Policy*, edited by Jeffery Schott, 59-84. Washington D.C. Institute for International Economics.

World Trade Organization. 2013. "CARIBCAN: Request for Extension of Waiver." World Trade Organization, Geneva.

Yamazawa, Ippei. 1970. "Intensity Analysis of World Trade Flow." *Hitotsubashi Journal of Economics* 10 (2): 61-90.

Yang, Yongzheng, and Sanjeev Gupta. 2005. "Regional trade arrangements in Africa: past performance and the way forward." Working Paper 36, International Monetary Fund, Washington, D.C.

Yener, Kandogan. 2008. "Regionalism versus Multilateralism: Evidence for the Natural Trade Partners Theory from the Euro-Mediterranean Region?" *Journal of Economic Integration* 23 (1): 138-160.