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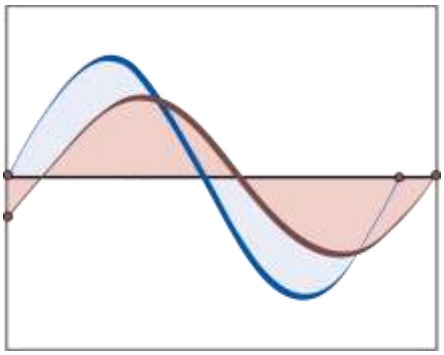

Early Signals of the CARIFORUM-EU Economic Partnership Agreement

Reshma Mahabir
Research Department

In 2008 the member states of CARICOM signed the CARIFORUM-EU Economic Partnership Agreement (EPA). This paper, via the use of the panel gravity model, assesses the impact of the EPA on CARICOM's exports to the EU market in its initial years of operation (2008-2010). Additionally, following in the vein of recent literature the paper compares the finding of the Poisson Pseudo Maximum Likelihood (PPML) estimator to traditional approaches in addressing the problem of zero trade flows reported between the various bilateral trading partners. The findings from the PPML estimation suggest that while the region as a whole has not yet been able to significantly increase its exports to the European markets, those CARICOM countries classified as the Less Developed Countries could have had initial success in using the EPA to penetrate the European market.

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Early Signals of the CARIFORUM-EU Economic Partnership Agreement

Reshma Mahabir[1]

1. Introduction

The economies of the Caribbean have had a long historical relationship with the member states of the EU. These economies have moved from a metropole and hub relationship with their former colonial governors to one of trading partners. In light of the former colonial link between the Caribbean nations and the formative nations of the EU, the Caribbean as well as other African and Pacific states (ACP) have enjoyed a preferential trading arrangement with the EU over the last three decades. These arrangements have been contained in the various incarnations of the Lomé agreement and the Cotonou agreement.

The establishment of the World Trade Organization and the necessity of obtaining waivers for preferential trading agreements, the ongoing enlargement of the EU to include countries of central and eastern Europe, as well as the "banana wars", created the environment for a change in the trading relationship between the Caribbean countries and the EU. Thus during 2004 to 2007, Trinidad and Tobago and the rest of the CARICOM member states (minus Montserrat) and the Dominican Republic negotiated an economic partnership agreement (EPA) with the 27 Members of the European Union. The EPA was provisionally initialled at the end of 2007[2], and the EU began to grant goods of CARIFORUM origin free entry into its markets from January 1st 2008. This duty-free quota-free (DFQF) access for goods of CARIFORUM origin is granted for virtually all goods (94 per cent sectoral coverage), with only a short transition period for sugar and rice.

In this paper, we make a preliminary analysis whether or not the CARICOM exporters have been able to take initial advantage of the market liberalization in goods that has occurred. While the EPA is an expansive document covering not only trade in goods but also in services, the investigation is limited to merchandise trade given the paucity of the necessary data in the case of trade in services. The EPA continues the tradition of providing duty free access to the EU market, and it expands the duty free access to encompass the agricultural goods that were often the subject of limitations in the form of quotas in the Lomé / Cotonou

[1] The author is a Senior Economist in the Research and Policy Department of the Central Bank of Trinidad and Tobago. Views expressed are those of the author and do not necessarily reflect those of the Central Bank. The author wishes to thank Prof. Chris Milner and Dr. Maryse Robert for their comments on an earlier draft.

[2] This bilateral trade agreement was formally signed in October 2008 (Haiti signed onto the agreement in December 2009).

agreements. The EPA was also purported to have enhanced the rules of origin, and as well improved the trade facilitation measures, all of which should have a positive impact on trade flows.

A gravity model will be used to investigate the impact of the EPA on CARICOM exports to the EU. This methodology has long been established in the literature as one which provides reliable results with limited data. The gravity model allows for the disaggregation of the effects of the trade agreement from other factors which also influence trade between nations/regions. The focus of this paper is on CARICOM exports to the EU market, as there has been a delay in the implementation of the necessary legislative and regulatory regimes to facilitate the duty free entry of EU goods on the part of the CARICOM countries. Indeed it was only in September 2009 that the Jamaican Cabinet approved amendments to the Customs Act, to give effect to duty free access into Jamaica of EU goods listed in the EPA.

In order to explore the impact that the increased market access has had on CARICOM's exports to the EU the paper first begins by, in the next section, briefly reviewing previous studies that have been conducted on the issue. Generally previous authors have focused on the impact of the EPA on the economies of the Caribbean in term of the loss of tax revenue (due to the need for reciprocal liberalization) and the impact on CARICOM manufacturers due to increased competition from European goods. Section 3 seeks to provide a basis for the empirical results by examining some of the factors which may have affected CARICOM's exports to the EU over the period 2008-2010. Section 4 describes the gravity model used in the investigation and provides a summary of the recent debate in the literature regarding the appropriate methodology for dealing with the issue of zero trade flows between bilateral trading partners. Following the description of the model and the dataset used, the results from the various estimations are presented. The final section concludes, and provides some recommendation for future work.

2. A review of the literature

In the run-up to the conclusion of the EPA negotiations several studies sought to address whether the EPA would prove beneficial to the countries of the Caribbean. These studies often employed the partial equilibrium framework, and given the move from a preferential arrangement to a bilateral agreement, emphasis was placed on examining the impact of the EPA in regard to the imports from the EU coupled with the impact of the loss of tariff revenue. The studies[3] generally find that imports from the EU are expected to

[3] Fontagne *et al* (2008), Busse and Lüehje (2007), Evans *et al* (2006), Maasdorp *et al* (2005), Gasiorek and Winters (2004), Greenaway and Milner (2003), and Bussolo (2002). See Appendix 2 for summary of the results of these studies.

increase while at the same time customs revenue is forecasted to decrease. Of course the impact of the EPA will vary between the countries in the region. A number of the studies which examined the EPA did so in the context of the evaluation of potential alternative scenarios for trade liberalisation in the Caribbean. Overwhelmingly these studies find that multilateral liberalization will be of greater benefit to the region than the bilateral liberalisation offered under the EPA. Other studies sought to forecast the potential revenue loss to the CARIFORUM region due to the implementation of the EPA. Meyn *et al* (2009) find that by 2013 the annual revenue loss for Barbados is estimated at €2-6 million, for Suriname €3 million and for Guyana €0.5-€2 million. Stevens *et al* (2008) estimate that by 2033 (when all the negotiated liberalization is scheduled to have taken place) the annual loss of revenue will range from €3.1 million for the Bahamas to €186.3 million for Dominica. In the case of Trinidad and Tobago the estimated annual revenue loss is €41.3 million.

Limited work has been conducted on the impact on the EPA on CARIFORUM exports to the EU. Under the precursors to the EPA many products from the region were afforded duty-free treatment or special market access under "commodity protocols". Nevertheless Stevens *et al* (2008) identified that there remained scope for improvements in market access of CARICOM goods into the EU market. Stevens *et al* (2008) examined CARICOM exports to the EU in 2007 and identified several goods that faced tariffs. These included oranges, tomatoes, onions, lemons, wine, cocoa powder, biscuits, jam tarts, gum and jelly confectionery, pasta, waffles, wafers, fruit/vegetable juices and rice. The liberalization of these additional tariff lines could potentially lead to an increase in the export of those products.

Table 1: CARICOM exports to EU Facing Tariffs in 2007

	# of items facing tariffs under GSP/MFN	# of items facing tariffs under Cotonou	Duties payable under GSP/MFN (€)	Duties Payable under Cotonou (€)
Antigua & Barbuda	50	8	333,356	48,900
Bahamas	50	8	1,632,910	5,930
Barbados	48	4	11,581,723	14,210
Belize	39	1	35,545,328	92,545
Dominica	36	4	1,389,968	4,886
Grenada	19	2	94,949	57
Guyana	47	9	75,970,997	1,617,914
Jamaica	152	32	74,374,221	281,216
St Kitts & Nevis	28	0	11,566	0
St. Lucia	22	0	5,400,493	0
St. Vincent & the Grenadines	16	1	2,476,042	12
Suriname	141	21	13,912,482	267,935
Trinidad & Tobago	96	6	13,038,086	2,222

Source: Stevens *et al* (2008)

In the new regime virtually all the products entering from the CARIFORUM region will enter the market duty-free quota-free (DFQF) once they satisfy the requirements of the rules of origin[4]. There are some exceptions, such as the phased liberalization of sugar and rice imports, where in the case of the former it is to be accompanied by the removal of price guarantees. The removal of the price guarantees may be of concern for the few CARIFORUM countries that are still engaged in the production of sugar such as Guyana.

Stevens *et al* (2008) also noted that the application of the DFQF trade can result in benefits to the CARIFORUM region if there is redistribution of import taxes accruing to the CARIFORUM producers, if there is a resultant increase in export volumes due to trade creation, and if the removal of the tariffs makes exports of some commodities commercially viable.

In addition to the further liberalization the EPA contains what are described by the trade negotiators as improved rules of origin and enhanced trade facilitation measures. Improvements in these issues should lead to easier accessibility of the EU markets, and hence raises the possibility of increased exports. ECLAC[5] (2008) noted that one advance in the rules of origin in the EPA, when compared to the Cotonou Agreement, is the issue of cumulation. In essence, in the EPA the EU has agreed to accumulation involving all the ACP states, not just the CARIFORUM states, as well as those countries designated as neighbouring developing states. Hence there is greater scope for segmentation along the value chains, and thus the possibility for more cost competitive products due to lower cost for inputs. In regards to trade facilitation Article 31 of the EPA requires parties to the agreement to "*take further steps towards the reduction, simplification and standardisation of data and documentation; and simplify requirements and formalities wherever possible, in respect of the rapid release and clearance of goods*". These actions should make the process of exporting to the 27 countries in the EU simpler.

3. Expected Impact of the Change in Market Access

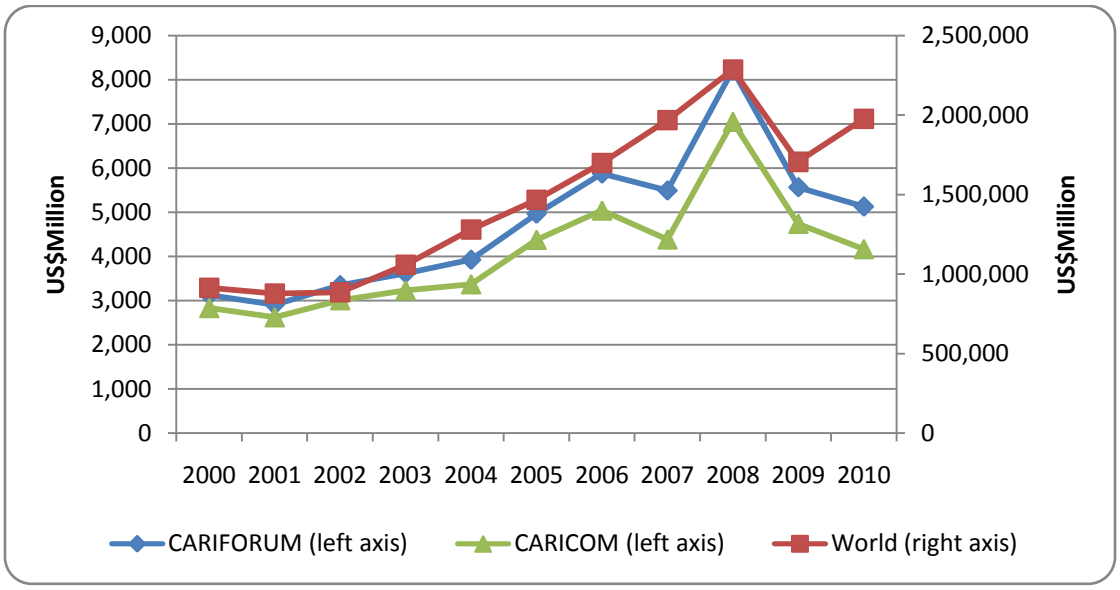
As one can glean from the previous section, much of the focus of the impact of the EPA has been related to the revenue loss for the CARICOM countries due to the removal of tariffs, and the potential for greater

[4] The rules of origin are guidelines used to determine a good's country of origin. This is particularly critical when the inputs for a good are sourced from different countries. The general guidelines tend to focus on the issue of substantive transformation, usually there should be a change in the tariff classification, or substantial value added, or some minimum level of transformation of the good should have occurred.

[5] Economic Commission for Latin America and the Caribbean

imports from the EU region. A reading of the literature[6] finds that the discussion on the penetration of the EU market has heavily focused on the potential for increased trade in services, despite limited hard data to assess such an assertion[7]. Nevertheless from the work of Stevens *et al* (2008) one would expect that the CARICOM countries may be able to benefit via increased goods exports since in 2007 a number of items exported to the EU were still subjected to tariffs. Their analysis suggests that Jamaican goods may have the most to benefit in terms of the number of items that were subjected to tariffs as well as the size of the duties payable under the General System of Preferences/ Most Favoured Nation GSP/MFN and Cotonou arrangements, followed by Guyana and Belize. Additionally the removal of tariffs may result in goods that were previously uncompetitive in the EU market becoming viable for export. One caveat though is the limited production capacity in the region, and the often cited lack of economies of scale necessary to produce products that would be cost competitive. However Caribbean manufacturers have the potential to produce goods that are competitive based on quality, innovation and/or the needs of some niche markets.

Graph 1: EU-27 Imports 2000-2010



Source: IMF (various years)

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[7] See for example Sauvé, Pierre and Natasha Ward (2009) "The EC-CARIFORUM Economic Partnership Agreement: Assessing the Outcome on Services and Investment" European Centre for International Political Economy. Brussels, Belgium. See also Francis, Allyson and Heidi Ullrich (2008) "CARIFORUM EPA and Beyond: Recommendations for negotiations on Services and Trade related issues in EPAs – EPA negotiations on Trade in Services: Analysis of CARIFORUM-EU EPA" Federal Ministry for Economic Cooperation and Development, Eschborn, Germany.

Additionally any potential increase in exports to the EU market would have been affected by the global financial crisis of 2008/2009 and the sovereign debt crisis of 2010/2011. As can be seen in the above graph, after 2008 there was a decline in the EU 27 imports from the world as well as from the Caribbean region. Furthermore, while the graph illustrates that there has been some revitalization with respect to imports from the world; imports from the Caribbean region have not shown the same pattern of recovery.

4. The Gravity Model

The gravity model was introduced to the econometric analysis of international trade flows by Jan Tinbergen (1962)[8], who used the model to evaluate the effect of free trade agreements (FTA). The basic gravity model includes the variables of GDP, population and distance as measures of the push and pull factors that affect international trade. The impact of a trade agreement is modelled by a dummy variable, which has a value of 1 when the agreement is in effect and 0 otherwise. In the evolution of the gravity model many other variables have been included in the analysis including most often GDP per capita, common language, common history and common borders. There have also been attempts at separating the impact of trade agreements into the traditional trade creation and trade diversion effects.

The early applications of the gravity model were not grounded in a formal theoretical construct but were based on general observations of trade flows. Since the early 1980s economists have shown that the gravity model is theoretically sound with foundations in the framework in international trade theory based on increasing returns to scale, product differentiation at the firm-level, and imperfect substitutes. It is also generally accepted that the gravity model can be derived from a partial general equilibrium framework. Over the last almost 50 years the gravity model has become the empirical workhorse of international trade theory due to its high degree of explanatory power, and limited data needs.

While early studies using the gravity model tended to take a cross sectional approach in the analysis, more recently studies have employed the use of panel estimation. This has been done in large part due the development of sophisticated econometric packages which allow for a wide range of data points to be used in the analysis.

[8] Tinbergen, Jan (1962), *The World Economy. Suggestions for an International Economic Policy.* New York: Twentieth Century Fund.

Earlier studies employing the use of the gravity model have examined the impact of the close relationship between the CARICOM region and the EU. Sandberg *et al* (2006) employed the gravity model (cross-section for 1980-1996) to examine the effects of regional integration, colonial links and linguistic ties on intra-regional CARICOM trade as well as trade between the region and North American and European Union countries. They find that history and regionalism have a significant and positive effect on CARICOM trade, while income per capita and population have significant and positive effects. Persson and Wilhelmsson (2006) in assessing the impact of the preferential trading arrangements offered by the EU (1960-2002) find that in general the exports of the ACP countries are 30 per cent greater because of the Yaoundé and Lomé preferences.

In our model we use trade flows of the 12 CARICOM countries with some 90 partners thus covering on average over 90 per cent of CARICOM trade. The CARICOM member states that are excluded are Antigua and Barbuda – since the IMF does not have reporter country trade data, Montserrat – which is not a signatory of the EPA, and Haiti. The data set employed covers the years 1990 to 2010, and the export data was taken from the IMF Direction of Trade Statistics. Other data such as population, and GDP were taken from the IMF's World Economic Outlook database. The creation of the dummy variables for the respective trade agreements was guided by the date of signature of the respective agreements.

Table 2: Date of Signature of Trade Agreements

Agreement	Date of Signature
CARICOM-Venezuela	13 October 1992
CARICOM-Colombia	24 July 1994
CARICOM-Dominican Republic	22 August 1998
CARICOM-Costa Rica	29 March 2004

Source: OAS (2011)

One methodological issue that modelling Caribbean trade flows faces is a high number of reported zero trade flows. While in some cases these may be the result of under reporting, in many cases there may be no relationship between the two countries and a third scenario that is often referenced in the literature is that the zero flows are due to censoring[9]. In the current dataset some 46 per cent of the trading relationships report zero trade.

[9] In some cases this may be the result of deliberate underreporting. It can also be a feature of economies where the value of trade with a specific trading partner is very small for example of country A exports US$200 to country B, however if the figures reported are in US$ millions or US$ thousands this relationship would be reported as 0.

One approach to this problem is to simply drop those relationships in which zero trade flows are reported. However this results in a loss of information and according to Burger, van Oort, and Linders (2009) results from the estimation can be biased when the zero-trade flows are non-randomly distributed. In an effort to keep the information in the zero pair, one solution in the literature has been to simply add a value of 1 (or some other small value) to the import or export variable. However as various authors have shown this can also result in distorted results depending upon what value is used to make the dependent variable positive. In cases where censoring of data is the issue authors may use a Tobit specification. In the current dataset the presence of zero trade flows are more likely to be reflective of the true status of the trading relationship that the small economies of the Caribbean have with other nations, given their limited productive capacity.

Recently Santos Silva and Tenreyro (2006) have argued that use of either of these estimation procedures or traditional regression analysis results in biased estimates as the expected value of the logarithm of a random variable is different from the logarithm of its expected value. Santos Silva and Tenreyro (2006) argue instead that gravity models and other constant elasticity models should be estimated by a simple pseudo-maximum-likelihood (PML) estimation technique which would also allow the model to be estimated in its multiplicative form. They find that a Poisson Pseudo Maximum Likelihood (PPML) methodology is an efficient way to take account of zero trade flows in the gravity model. Westerlund and Wilhelmsson (2011) also use a Poisson model to examine the impact of the 1995 EU enlargement. They find that the Poisson ML estimates are typically larger when compared to the OLS estimates, and this finding is consistent with the results of the Monte Carlo estimations which suggest that the OLS estimators are downwards biased. In extending the application of the Poisson model, Burger, van Oort, and Linders (2009) note that the standard Poisson model may be susceptible to the problem of overdispersion and excess zero flows. These authors recommend using the zero-inflated Poisson pseudo maximum likelihood model, and the zero-inflated negative binomial pseudo maximum likelihood model when the dataset contains a large number of zeros. However their argument is refuted in Santos Silva and Tenreyro (2011), who find that even when there is a large number of zeros in the dataset the PPML estimator is generally well behaved. Further these authors note[10] that the zero inflated models are subjected to their own limitations including not being invariant to scale, i.e. the measuring in units of thousands and millions leads to different results.

[10] See: http://privatewww.essex.ac.uk/~jmcss/LGW.html

In order to assess the methodological implications of dealing with the zero trade flows the following model is estimated.

$$ln\,(X_{ijt}) = \alpha_o + \theta_{ij} + \gamma_t + \alpha_1 ln(GDP_{it}) + \alpha_2 ln(Pop_{it}) + \alpha_3 ln(GDP_{jt}) + \alpha_4 ln(Pop_{jt}) + \alpha_5 CARICOM + \alpha_6 DRFTA + \alpha_7 CRFTA + \alpha_8 CFTA + \alpha_9 VFTA + \alpha_{10} LOME + \alpha_{11} EPA + \varepsilon_{ijt}$$

Where the dependent variable takes the form of $ln\,(X_{ijt}),\ ln\,(X_{ijt}+1)$ and (X_{ijt}).

Table 3: List of Explanatory Variables

X_{ij}	Exports by country i to country j
GDP_k	GDP of country k (k=i,j)
Pop_k	Population of country k (k=i,j)
CARICOM	dummy variable that takes a value of 1 if countries i and j are members of the Caribbean Common Market, and zero otherwise
Lomé	dummy variable that takes a value of 1 if country i exports to the EU Member States can benefit from the Lome/Cotonou arrangement, and zero otherwise
DRFTA	dummy variable that takes a value of 1 if countries i and j are parties to the CARICOM-Dominican Republic Free Trade Agreement, and zero otherwise
CRFTA	dummy variable that takes a value of 1 if countries i and j are parties to the CARICOM-Costa Rica Free Trade Agreement, and zero otherwise
CFTA	dummy variable that takes a value of 1 if countries i and j are parties to the CARICOM-Colombia Free Trade Agreement, and zero otherwise
VFTA	dummy variable that takes a value of 1 if countries i and j are parties to the CARICOM-Venezuela Free Trade Agreement, and zero otherwise
EPA	dummy variable that takes a value of 1 if country i exports to the EU Member States can benefit from the CARIFORUM-EU Economic Partnership Agreement, and zero otherwise
θ	Country pair fixed effects
γ	Time effects

In the estimation of the panel gravity model there is little consensus on the use of random effects and fixed effects models. While some authors place emphasis on using the Hausman test for choosing between the two specifications, many others chose the specification based on the variables of interest in the investigation (there is also an argument that the Hausman test is itself biased). The fixed effects model is estimated here in order to take into account any institutional factors which are invariant through time that may influence trade between the CARICOM countries and their trading partners. Additionally, in this paper, variables such as distance, common language, colonial links, etc. are not of primary importance for the analysis, as they

have often been examined in other papers and tend to be significant and have the expected sign on the coefficient[11].

4.1 **Scenarios**

In addition to the examination of the results using the different methodologies suggested in the literature to deal with the presence of zero trade flow, a permutation of the model that revolves around the segregation within CARICOM of groups of countries at different developmental stages is also undertaken. Thus the dataset is broken into those countries that are designated the More Developed Countries[12] (MDCs) and the Less Developed Countries[13] (LDCs) in the Revised Treaty of Chaguaramas[14].

5. Results and Policy Recommendations

A comparison of the results from the various methodologies indicated that the economic size of the partner country plays a positive and significant role. According to the traditional theory, the larger the size of the country's GDP, the greater its absorptive capacity for goods. The coefficients on the reporter (CARICOM) country GDP are also positive and significant. This is consistent with the proposition that the larger the country's GDP the greater its productive capacity and ability to export. In particular the sizes of the coefficients on the partner country GDP are relatively similar, while in the case of the reporter country the result from the PPML estimation is the largest of the three coefficients. In the case of the population variable there is considerable variation in terms of sign, size and significance among the different methodologies. In the PPML estimation the size of the coefficient of the partner country population size is larger than the results from the other methodologies, and is also positive and significant. The size and significance can be taken as indicative that the larger the trading partner's population the greater its ability to absorb exports from the region. The population variable in the case of the reporter country is negative and significant. While this result may be unexpected it is not inconsistent with findings from other analyses. The significant negative coefficient could point to the presence of a domestic market that is able to consume much of what is produced domestically.

[11] As a test of the robustness of the results a random effects model was also estimated. The findings were very similar to those from the fixed effects model, though the sizes of the coefficients were larger.
[12] These countries are the Bahamas, Barbados, Guyana, Jamaica, Suriname, and Trinidad and Tobago.
[13] These countries are Antigua and Barbuda, Belize, Dominica, Grenada, St Kitts and Nevis, St. Lucia and St. Vincent and the Grenadines.
[14] http://www.caricom.org/jsp/community/revised_treaty-text.pdf

In the case of the main variable of interest EPA, in the two traditional methodologies the relation is categorised as significant though negative, indicating that the trade between the EU and CARIFORUM countries is significantly below normal. A more plausible finding emanates from the PPML that is consistent with *a prior* expectations, i.e. that the CARIFORUM-EU EPA has resulted in some increased trade though not at statistically significant levels. These results suggest that non-tariff barriers continue to play an important role in deterring CARICOM exports to the EU market, and that the implementation of effective trade facilitation measures is needed. The creation of the institutional mechanism to assist with the EPA implementation will be an important tool to assist countries in increasing their exports to the EU.

By further examining the results from the PPML model at the level of the development blocs, it is evident that the while the MDCs did not significantly benefit from the increased market opportunities, the LDC countries were able to significantly increase their trade with the EU countries. This is a rather surprising finding, as one would have expected that out of the two groups the MDCs would have been the one able to better exploit the opportunities under the agreement. An initial hypothesis was that the results were influenced by the variation in Trinidad and Tobago's exports from the petrochemical sector. However, excluding Trinidad and Tobago from the dataset results in very little change in the overall findings. A closer examination of trade from the LDCs to the EU finds that these countries were able to increase their exports of vegetables, fruits, and alcoholic beverages over the 2008-2010 period when compared to earlier years. Given that many of these items would have been subjected to duties under the Cotonou Agreement, the finding of the econometric analysis is now not so surprising. In fact the results from the estimations indicate that the precursors to the EPA agreement had a similar effect on trade between the European and CARICOM LDC countries.

The lack of the effective usage of the trade agreement to penetrate the EU is consistent with the results indicated by the variables examining the other trade and preferential agreements to which CARICOM Member states are party. The estimated coefficients signal that trade between the CARICOM Member States and Colombia did not significantly change after the signing of the agreement in 1994. In the case of the CARICOM-Costa Rica Agreement, while for the region as a whole and the MDCs the FTA has had an insignificant effect, the LDCs have been able to significantly increase their trade with Costa Rica. The coefficient on the oldest trade agreement examined, the CARICOM–Venezuela Agreement trading relationship, while significant is negative. One can hypothesise that this may be reflective of the political developments in Venezuela that have emerged over the last decade or so. Further it should be noted that this agreement had a limited coverage, and negotiations to expand the agreement were unsuccessful.

Rather unexpectedly the PPML estimation finds that in the case of the CARICOM-Dominican Republic agreement, the relationship is negative and significant, though it is insignificant for the LDCs.

The utilization of the opportunities afforded under the trade agreements lies in large part on the efforts of the private sector, in this case the manufacturers of goods of CARICOM origin. In an effort to boost exports to the EU, the relevant officials both at the regional and national levels have undertaken to provide information on market access and opportunities through the hosting of seminars/conferences. Indeed Article 32 of the EPA obligates the signatory parties to ensure that information on customs and trade procedures/legislation as well as fees and other charges are made available to the public; as well as to foster dialogue between the business sector and the relevant government officials. In some cases, such as in Antigua and Barbuda and in Barbados, EPA implementation units were set up during the course of 2010 and in Grenada in 2011. These efforts may further aid the private sector in the exploiting the available opportunities under the EPA. In Trinidad and Tobago efforts have been made by the Ministry of Trade and Industry, through consultations and workshops highlighting the opportunities available under the EPA and the necessary frameworks / regulations that they need to fulfil to enter into the EU markets. Trinidad and Tobago has also signalled its intention to establish an EPA Implementation Unit in 2011. In addition to addressing the regulatory requirements and identifying market access opportunities, measures may need to be put in place to assist firms to address other issues such as enhancement of production capabilities and marketing strategies, and the development of competitive products (through not only cost competition, but also through innovations in the product and manufacturing process).

6. Conclusion

The results of this early examination of the impact of the EPA on CARICOM exports to the EU finds that while the LDC countries have been able to benefit from this agreement, CARICOM as a whole and the MDCs have not been able to use the preferential access granted as a platform for the further significant penetration of the region's exports into the EU market. These findings can be indicative of the strong regulatory and other non-tariff barriers that CARICOM exporters face in the EU market, as well as the possible lack of knowledge of trade opportunities that exist in the EU. The findings also suggest the need for the application of trade facilitation measures. However the ability of the LDCs to use the EPA to significantly increase their exports to the EU, indicates that there is a market for goods of Caribbean origin. Countries can seek to use their ability to sell primary goods in these markets as a lever to exporting high value added items. In interpreting the results, however, one needs to be cognisant that exporters may need a longer period of time in order to effectively increase production and penetration of the EU market place than the 3

years examined in this paper. Thus it is possible that a future examination of the trade flows may show different results.

While this paper has focused on trade in merchandise goods, much of the rhetoric in the pre and post EPA signing period surrounded the benefits to the CARICOM region that would emanate from the liberalization of the services market in the EU. This brings to the fore the need for reliable and up-to-date statistics on trade in services in order to facilitate an evaluation of whether or not the EPA has been beneficial for trade in services. Additionally researchers may wish to investigate whether the EPA has had an impact on foreign direct investment in the region, whether there has been significant transfer of knowledge and technology, and how has the developmental assistance been allocated.

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Appendix 1: Results of Gravity Model

	Total	MDC	LDC	Total	MDC	LDC	Total	MDC	LDC
	lexports			Lexports+1			exports		
Lgdpp	0.421 (0.158)***	0.448 (0.194)**	0.429 (0.254)*	0.887 (0.192)***	1.266 (0.278)***	0.490 (0.246)**	0.391 (0.183)**	0.409 (0.189)**	0.639 (0.406)
Lgdpr	0.418 (0.179)**	0.613 (0.203)**	-0.801 (0.873)	0.645 (0.298)**	1.334 (0.331)***	-3.002 (1.102)***	1.088 (0.295)***	1.095 (0.315)***	1.676 (1.172)
Lpopp	1.045 (0.723)	0.404 (0.889)	2.503 (1.166)**	-2.979 (0.865)***	-1.312 (1.367)	-4.729 (0.930)***	2.520 (1.394)*	2.492 (1.528)	3.934 (1.662)**
Lpopr	0.629 (0.688)	-1.640 (1.641)	1.250 (0.842)	3.033 (1.073)***	9.192 (2.744)***	2.757 (1.179)**	-2.105 (1.099)*	-3.620 (1.794)**	-1.264 (1.086)
CARICOM	1.585 (0.709)**	1.550 (0.847)*	1.257 (0.482)***	2.594 (0.851)***	1.453 (1.049)	4.057 (1.181)***	-0.342 (0.304)	-0.345 (0.340)	2.631 (0.750)***
CARICOM-Costa Rica	0.272 (0.557)	-0.755 (0.488)	1.398 (0.692)**	2.034 (0.760)***	-0.206 (0.389)	3.959 (0.633)***	0.150 (0.668)	-0.495 (0.329)	2.028 (0.906)**
CARICOM-Dominican Republic	0.047 (0.701)	0.592 (0.353)*	-0.748 (1.279)	1.759 (0.688)**	1.439 (0.658)**	2.073 (1.090)*	-0.379 (0.223)*	-0.457 (0.222)**	0.798 (0.775)
CARICOM-Venezuela	-0.049 (0.592)	-0.213 (0.632)	-0.002 (1.073)	0.428 (0.976)	-0.012 (1.409)	1.106 (1.293)	-1.685 (0.368)***	-1.739 (0.397)***	-2.196 (0.988)**
CARICOM-Colombia	0.019 (0.229)	0.062 (0.277)	-0.277 (0.388)	1.080 (0.849)	0.245 (0.512)	2.292 (1.184)	-0.278 (0.210)	-0.352 (0.216)	1.306 (0.896)
Lome	-1.129 (0.232)***	-1.232 (0.306)***	-0.724 (0.274)***	-1.622 (0.279)***	-1.631 (0.421)***	-1.617 (0.353)***	0.892 (0.681)	0.998 (0.732)	1.158 (0621)*
EPA	-1.723 (0.261)***	-2.122 (0.343)***	-0.898 (0.320)***	-2.021 (0.325)***	-2.568 (0.489)***	-1.487 (0.412)***	1.001 (0.692)	1.142 (0.749)	1.153 (0.589)**
c	8.645 (1.688)***	8.422 (1.999)***	6.032 (3.083)*	12.499 (2.433)***	8.991 (3.234)***	13.017 (3.529)***			

Note: Value of robust standard errors in brackets and * 10% significance level, ** 5% significance level, ***1 % significance level

Appendix 2: Synopsis of Previous Studies on the Impact of the CARIFORUM –EU EPA

Authors	Issue	Methodology	Coverage	Findings
Fontagne *et al* (2008)	Impact of EPA in the six ACP regions	Dynamic partial equilibrium	Mean of 2002-2004 Antigua and Barbuda Bahamas Barbados Belize Dominica Dominican Republic Grenada Guyana Jamaica St. Kitts & Nevis St. Vincent & the Grenadines Suriname Trinidad & Tobago	Increase in volume imports from the EU by 27 per cent Increase in export volume of 25 per cent Loss of Tariff revenue of 0.2-0.8 per cent share of GDP
Busse and Lüehje (2007)	Change in Caribbean imports from the EU Government revenue from taxes	Partial equilibrium	2002 Antigua and Barbuda Bahamas Barbados Belize Dominica Dominican Republic Grenada Jamaica St. Kitts & Nevis St. Lucia Trinidad & Tobago	Overall change in imports from the EU is US$190 million or 10.6 per cent Trade creation exceeds trade diversion Loss in customs revenue of an average of 15.1 per cent of total import duties Loss of an average of 1.79 per cent of total government revenue
Evans *et al* (2006)	Evaluation of different trade policy scenarios	CGE – Caribbean Globe model	2001 Antigua and Barbuda Bahamas Barbados Dominica Dominican Republic Grenada Haiti Jamaica St. Kitts & Nevis St. Lucia St. Vincent & the Grenadines Trinidad & Tobago	Shallow integration with the EU leads to minimal welfare gains and possibly welfare losses. Multilateral trade liberalization leads to significantly higher welfare gains
Maasdorp *et al* (2005)	Import of Trinidad and Tobago imports from the EU	Partial equilibrium	2003 Trinidad & Tobago	Loss of customs revenue amounting to 0.5 per cent of 2003/2004 central government recurrent revenue Fall in output in some sectors and fall in employment - loss of 585 jobs in the manufacturing sector

Authors	Issue	Methodology	Coverage	Findings
Gasiorek and Winters (2004)	Effect on Caribbean import behaviour	Partial equilibrium	2002 Antigua & Barbuda Bahamas Jamaica St. Kitts & Nevis St. Lucia Trinidad & Tobago	Potential for trade diversion Loss of revenue
Greenaway and Milner (2003)	Evaluation of different trade policy scenarios	Partial equilibrium	1998 Barbados Belize Grenada Jamaica, St Lucia Trinidad St Vincent 1997 Dominica St Kitts and Nevis	Multilateral liberalization is net welfare-raising and is preferable to broader reciprocity (with both the EU and USA), which is in turn preferable to narrow reciprocity (with the EU only).
Bussolo (2002)	Evaluation of different trade policy scenarios	CGE	1993 Jamaica	Multilateral liberalization is preferable to other trading agreements