

EVALUATION OF TRADE AND TARIFF REVENUE EFFECTS FOR THE
ORGANIZATION OF EASTERN CARIBBEAN STATES UNDER ALTERNATIVE TRADE
LIBERALIZATION SCENARIOS

By

MAX GRUNBAUM

A DISSERTATION PRESENTED TO THE GRADUATE SCHOOL
OF THE UNIVERSITY OF FLORIDA IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

UNIVERSITY OF FLORIDA

2007

© 2007 Max M. Grunbaum Nagiel

ACKNOWLEDGEMENTS

There are several people to whom I am grateful for making my academic and personal endeavors at the University of Florida a rewarding experience. I thank my dissertation committee members, whose guidance throughout the process has been exceptional. I first met Dr. Tim Taylor during the first year of the program. He distinguished himself as a superb and dedicated teacher. In that role he provided invaluable support and encouragement, particularly during the most trying days of the core program. As committee chair, he has been a true mentor and offered exceptional guidance and support. Without these elements, this dissertation would have never been possible.

Dr. Gary Fairchild and Dr. Robert Emerson have been tremendous examples of professionalism and dedication. Dr. Fairchild has always had an open door to share a joke or provide some of his contagious good humor. Dr. Terry McCoy was instrumental in enabling me to come to UF in the early nineties and later offered me the necessary encouragement to return to school and pursue this degree. Throughout the years he kept an open door and was always open for a candid conversation and insights on Latin American politics.

I also acknowledge Dr. Jeffrey Burkhardt whose support throughout my stay at the FRE department has been invaluable. He was a tremendous source of encouragement particularly during those dark days of qualifier exams. Without this support none of this would have been possible.

I have also benefited from the interaction and conversations with fellow students. Brian Condon, Carlos Trejo, and Oscar Ferreira made these years more interesting. I particularly thank Ronald M. Gordon. I am sure I would not have made it past the first year without his encouragement and those long hours of study at the “white house.”

I thank my wife, Diana, who throughout this period shared in my effort to complete this dissertation project. She was certainly kind, supportive and patient when my mind was elsewhere. I also thank and honor my parents and grandparents who have always been a source of inspiration, who have taught me love, respect, ethics, and the value hard work. For all they have done throughout my life, this dissertation is for them.

TABLE OF CONTENTS

	<u>page</u>
ACKNOWLEDGEMENTS.....	3
LIST OF TABLES.....	7
ABSTRACT.....	11
CHAPTER	
1 INTRODUCTION.....	13
Problematic Situation.....	15
Problem Statement.....	18
Research Objectives.....	19
Organization of this Study.....	21
2 ECONOMIC, STRUCTURAL AND TRADE CONTEXT OF THE OECS.....	23
Organization of Eastern Caribbean States.....	23
Geographic and Economic Characteristics of OECS Members.....	25
Geographic Characteristics.....	26
Economic Structure and Characteristics.....	28
Recent Economic Trends.....	30
Trade and Trade Structure.....	32
Discussion and Implications.....	39
3 TRADE LIBERALIZATION AND EMPIRICAL METHODS FOR THE ANALYSIS OF TRADE POLICY.....	59
Trade Liberalization and Economic Performance.....	59
The Theory of Preferential Trade Agreements.....	63
Empirical Methods in Trade Policy Analysis.....	69
Gravity Models.....	71
Computable General Equilibrium Models (CGE).....	78
Partial Equilibrium Models.....	83
The Verdoorn model.....	84
The Baldwin-Murray model.....	85
Fiscal Impacts of Trade Liberalization.....	91
4 TRADE AND TARIFF REVENUE EFFECTS OF ALTERNATIVE TRADE SCENARIOS.....	96
The Empirical Model.....	96
Scenarios Considered and Available Data.....	102
The Pre-Simulation Tariff and Trade Structure.....	104

Simulation Results	106
Trade Effects	106
Tariff Revenue Effects	110
Imports Most Affected by Tariff Elimination	114
Policy Implications	119
Discussion and Implications	122
5 SUMMARY AND CONCLUSIONS	145
Summary	145
Conclusions.....	147
Considerations for Further Research	153
APPENDIX: MOST AFFECTED PRODUCTS BY TRADE AND TARIFF REVENUE EFFECTS	154
LIST OF REFERENCES	178
BIOGRAPHICAL SKETCH	187

LIST OF TABLES

<u>Table</u>	<u>page</u>
2-1 Selected statistics	42
2-2 Sectoral composition of OECS economies	42
2-3 Selected public and monetary sector indicators 1998-2003	43
2-4 Selected economic performance indicators	43
2-5 Export, imports and trade share	44
2-6 Exports of services 1980-2004.....	44
2-7 Imports of services 1980-2004.....	45
2-8 Average export of goods 1980-2004.....	45
2-9 Imports of goods 1980-2004.....	46
2-10 Top ten export categories for Antigua and Barbuda.....	47
2-11 Top ten export partners for Antigua and Barbuda	47
2-12 Top ten import categories for Antigua and Barbuda	48
2-13 Top ten import partners for Antigua and Barbuda.....	48
2-14 Top ten export categories for Dominica	49
2-15 Top ten export partners for Dominica.....	49
2-16 Top ten import categories for Dominica.....	50
2-17 Top ten import partners for Dominica	50
2-18 Top ten exports categories for Grenada.....	51
2-19 Top ten export partners for Grenada.....	51
2-20 Top ten import partners for Grenada	52
2-21 Top ten import categories for Grenada.....	52
2-22 Top ten export categories for St. Kitts and Nevis.....	53
2-23 Top ten export partners for St. Kitts and Nevis	53

2-24	Top ten import categories for St. Kitts and Nevis	54
2-25	Top ten import partners for St. Kitts and Nevis.....	54
2-26	Top ten export categories for St. Lucia.....	55
2-27	Top ten export partners for St. Lucia	55
2-28	Top ten import partners for St. Lucia.....	56
2-29	Top ten import categories for St. Lucia	56
2-30	Top ten export categories for St. Vincent and the Grenadines	57
2-31	Top ten export partners for St. Vincent and the Grenadines.....	57
2-32	Top ten import categories for St. Vincent and the Grenadines.....	58
2-33	Top ten import partners for St. Vincent and the Grenadines	58
4-1	Assumed elasticity values.....	124
4-2	Pre-simulation values for total imports and government revenues.....	124
4-3	Trade tax and tariff structure for OECS members	125
4-4	Ten major trading partners for OECS members in 2004	127
4-5	Top ten imports pre-simulation imports in 2004 for OECS members.....	128
4-6	Trade effects from tariff elimination on EU imports	131
4-7	Trade effects from tariff elimination on EU and Caribbean imports.....	132
4-8	Trade effects from tariff elimination on EU, Caribbean and NAFTA imports	133
4-9	Trade effects from tariff elimination on EU plus FTAA imports.....	134
4-10	Summary of trade effects as percent of total imports according to liberalization scenario	135
4-11	Tariff revenue effects from tariff elimination on EU imports	136
4-12	Total trade tax revenues inclusive of total trade counterbalance effects from tariff elimination on EU imports.....	137
4-13	Tariff revenue effects from tariff elimination on EU and Caribbean imports	138

4-14	Total trade tax revenues inclusive of total trade counterbalance effects from tariff elimination on EU and Caribbean imports.....	139
4-15	Tariff revenue effects from tariff elimination on EU, Caribbean, and NAFTA imports.	140
4-16	Total trade tax revenues inclusive of total trade counterbalance effects from tariff elimination on EU, Caribbean and NAFTA imports	141
4-17	Tariff revenue effects from tariff elimination on EU plus FTAA imports	142
4-18	Total trade tax revenues inclusive of total trade counterbalance effects from tariff elimination on EU plus FTAA imports.....	143
4-19	Change in tariff revenue as a percentage of total government revenue and change in tariff revenue as percentage of total government revenue inclusive of counterbalancing effects according to liberalization scenario	144
A-1	Antigua and Barbuda top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU liberalization 2004	154
A-2	Antigua and Barbuda top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU and Caribbean liberalization 2004.....	155
A-3	Antigua and Barbuda top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU, Caribbean, and NAFTA liberalization 2004 ..	156
A-4	Antigua and Barbuda top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU and FTAA liberalization 2004.....	157
A-5	Dominica top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU liberalization 2004	158
A-6	Dominica top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU and Caribbean liberalization 2004	159
A-7	Dominica top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU, Caribbean and NAFTA liberalization 2004.....	160
A-8	Dominica top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU and FTAA liberalization 2004	161
A-9	Grenada top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU liberalization 2004	162
A-10	Grenada top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU and Caribbean liberalization 2004	163
A-11	Grenada top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU, Caribbean and NAFTA liberalization 2004.....	164

A-12	Grenada top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU and FTAA liberalization 2004	165
A-13	St. Kitts & Nevis top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU liberalization 2004.....	166
A-14	St. Kitts & Nevis top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU and Caribbean liberalization 2004	167
A-15	St. Kitts & Nevis top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU, Caribbean and NAFTA liberalization 2004	168
A-16	St. Kitts & Nevis top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU and FTAA liberalization 2004	169
A-17	St. Lucia top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU liberalization 2004	170
A-18	St. Lucia top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU and Caribbean liberalization 2004	171
A-19	St. Lucia top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU, Caribbean and NAFTA liberalization 2004.....	172
A-20	St. Lucia top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU and FTAA liberalization 2004	173
A-21	St. Vincent & the Grenadines top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU liberalization 2004	174
A-22	St. Vincent & the Grenadines top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU and Caribbean liberalization 2004.....	175
A-23	St. Vincent & the Grenadines top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU, Caribbean, and NAFTA liberalization 2004.....	176
A-24	St. Vincent & the Grenadines top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU and FTAA liberalization 2004.....	177

Abstract of Dissertation Presented to the Graduate School
of the University of Florida in Partial Fulfillment of the
Requirements for the Degree of Doctor of Philosophy

EVALUATION OF TRADE AND TARIFF REVENUE EFFECTS FOR THE
ORGANIZATION OF EASTERN CARIBBEAN STATES UNDER ALTERNATIVE TRADE
LIBERALIZATION SCENARIOS

By

Max Grunbaum

August 2007

Chair: Timothy G. Taylor
Major: Food and Resource Economics

The Organization of Eastern Caribbean States (OECS) has benefited for years from trade preferences granted by its major trading partners. The Caribbean Basin Trade Partnership Agreement (CBTPA) grants preferential access to the United States while the Caribbean-Canada Trade Agreement (CARIBCAN) regulates preferential access to Canada. These agreements are framed within the World Trade Organization (WTO) sanctioned Generalized System of Preferences (GSP). Non-reciprocal trade preferences granted by the European Union (EU) and framed under successive Lomé Convention Agreements, however, are incompatible with WTO rules. Economic Partnership Agreements (EPAs) being negotiated between the OECS and the EU are intended to replace European non-reciprocal preferences by essentially creating a free trade area between these parties. These agreements exclude the OECS largest trading partners and can have unwelcome effects as they offer the potential for trade diversion and losses in welfare.

This dissertation research evaluated the trade and fiscal effects for the OECS of an EPA with the EU, as well as three other alternative trade liberalization scenarios using a partial equilibrium model and highly disaggregated trade data. The first scenario simulated an EPA

where all import tariffs were eliminated for EU goods, yet barriers for other countries remained. A second scenario contemplated the total elimination of import duties and exemptions for the Caribbean Community (CARICOM). The third scenario added members of the North American Free Trade Agreement (NAFTA) into the previous scenario and a final simulation considered the OECS joining the now stalled Free Trade Area of the Americas (FTAA).

The simulations performed in this dissertation provided some surprising insights into the effects of trade liberalization in the OECS. The quantification of trade creation, trade diversion and fiscal impacts of the alternative scenarios suggested that trade liberalization results in small to modest trade and fiscal impacts. The results also shed light into what would be a prudent course of action for the OECS. They also provided empirical support to theoretical arguments and policy suggestions that, for small countries such as the OECS, broader trade liberalization is superior to limited regional trade agreements.

CHAPTER 1 INTRODUCTION

Trade liberalization and the formation of economic integration agreements has been a major economic feature of the latter part of the twentieth century. During this period technological innovations led to the reduction in transportation and communications costs making physical distance less significant. Similarly, cultural distances have been reduced as information flows, consumption patterns and tastes and preferences have begun converging. Thus, the world economy has grown closer as international trade regimes were modified, trade barriers reduced, and flows of international capital and investments increased.

The role of trade and trade policy has often been linked to economic outcomes and performance. An open trade regime is considered to have positive economic impacts and is seen as a vehicle towards achieving superior rates of economic growth. Trade openness has also been associated with a more disciplined insertion into the world economy. In this sense, broad domestic economic reforms and improvements in domestic institutions have been linked with increased openness (Krueger 1997, 1998). Good governance, respect for property rights and the rule of law, as well as a macroeconomic environment with stable and undistorted prices have been noted as elements that often follow trade liberalization (Berg and Krueger 2003).

However, opposition and disagreement with policies of openness and trade liberalization have been commonplace. Arguments that openness and liberalization have significant negative effects on poverty, unemployment and a host of other issues have often been made (Weisbrot and Baker 2002). Others have further viewed liberalization policies as harmful for development, growth and equity (Conway 1997). Underlying some of these arguments, and in particular when related to small countries, is the notion that smallness makes them more vulnerable to external shocks. Hence, special considerations and exemptions should be made for such countries in

trade liberalization and other policies. Easterly and Kraay (1999), however, have argued that there is no need for special considerations and policies followed in small countries should be similar to those in their larger counterparts.

Despite the arguments and disagreements regarding trade policy, it is undeniable that the movement towards more liberalized trade not only creates challenges but also offers opportunities for achieving growth and prosperity. This is especially true for the small nations of the Organization of Eastern Caribbean States (OECS) who are facing the erosion of trade preferences while simultaneously having to liberalize their domestic markets.

The OECS was established in 1981 and includes nine members: Antigua and Barbuda, Dominica, Grenada, Montserrat, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Anguilla, and the British Virgin Islands. While the first six members are all independent nation states, Anguilla, the British Virgin Islands and Montserrat, are overseas territories of the United Kingdom. The principal concern behind the formation of the organization was the pursuit of economic integration and coordination and cooperation in foreign policy.

The countries of the OECS have a combined GDP of \$ 371 million, a population of about 586,000 and a total geographic surface area of 2,900 sq km. They are located in an area prone to natural disasters and their production and export structures are limited both in diversity and size. These characteristics are considered limiting factors in their ability to fully integrate into the global economy. However, OECS members are highly integrated into the world economy and international commerce occupies a sizable share of GDP. For the OECS the ratio of imports and exports to GDP is above one and this high trade share ratio is indicative of the relative importance trade and foreign sources of income have (World Bank 2005a).

Although the countries of the OECS have for years benefited from unilateral trade preferences with the EU, the United States and Canada, growth performance lagged while unemployment and poverty continued to be a problem (World Bank, 2005a). The active promotion by the World Trade Organization (WTO) of a multilateral trading system has posed challenges to the OECS and other small economies. Whether an open liberal trade regime will foster improved economic performance and better economic outcomes is an empirical issue and the assessment of such effects has to be made individually.

Countries such as the members of the OECS, who have for so long benefited from trade preferences, lack the incentive to pursue liberalization unilaterally. Although it is likely that their preferred trade policy position would be to continue benefiting from preferences without engaging in any further liberalization, they find themselves pressured to enter liberalization agreements, perhaps much to their sorrow.

Problematic Situation

As a subgroup of the African, Caribbean and Pacific nations (ACP), OECS members have maintained a special trading relationship with the EU based on non-reciprocal trade preferences. This relationship has been driven by cultural, historical, and past colonial links. The OECS, as an integral and fundamental part of the Caribbean Community (CARICOM), is also granted trade preferences by the United States and Canada on the basis of the Caribbean Basin Trade Partnership Agreement (CBTPA) and Caribbean-Canada Trade Agreement (CARIBCAN), respectively. The OECS has also been involved in hemispheric negotiations for the creation of the proposed, and now stalled, Free Trade Area of the Americas (FTAA).

However, trading arrangements with former European colonial powers have been particularly important to these countries. The successive Lomé Convention Agreements were the framework under which non-reciprocal duty-free access to the European market was granted

to products originating in ACP countries. The Lomé Convention Agreement was replaced by the Cotonou Agreement in 2000, with which the EU and ACP countries agreed to negotiate arrangements that would, due to their incompatibility with World Trade Organization (WTO) rules, lead to the elimination of non-reciprocal preferences granted by the EU. The gradual elimination of domestic trade barriers and the reduction in the Common External Tariff (CET), within the provisions stipulated by the Cotonou Agreement, will modify the existing trade relations between the EU and ACP countries.

The Cotonou Agreement contemplated the introduction of trading relationships based on Economic Partnership Agreements (EPA). Extending reciprocity on the basis of the mechanism provided by EPAs effectively turns the trade relationship into a free trade area. Negotiations on the formation of EPAs between the EU and six sub-regional ACP groupings have been taking place since 2003 and implementation is expected by 2008. The EPA negotiations, which are expected to have far reaching implications for the OECS, are being conducted within the grouping of Caribbean Forum of African, Caribbean and Pacific States (CARIFORUM).¹ In the process, several difficult prerequisites were to be attained and negotiated in order to lead to successful outcomes (Borrmann, Busse and Neuhaus 2005). Economic Partnership Agreements, not only are to include trade liberalization, but consider fostering greater regional integration, providing development assistance, promoting growth and reducing poverty.

The OECS economies have followed a development strategy based on non-reciprocity and inclusion into reciprocal trade agreements is perceived as a threat. Much of this perception is born from the disparities between the OECS and the larger more developed countries with which trade would open. This disparity has also raised concern related to the ability of these countries

¹ CARIFORUM includes all CARICOM members and the Dominican Republic.

to effectively negotiate substitutes for the preferential trade agreements. Furthermore, there is certain fear that extending reciprocity and the erosion of preferences will lead to detrimental effects for small developing countries (Peters 2002).

The OECS past reliance on trade preferences has not been inconsequential and there were some drawbacks. Production of export goods was biased toward those sectors protected by the preferences, such as bananas and sugar, and resulted in an export sector that became gradually less efficient. Although preferences were intended to serve as a vehicle for the achievement of trade, development and growth under favorable circumstances, these were not fully obtained. Preferential agreements might have made these countries complacent and non-competitive and may have introduced a series of distortions and disincentives. Preference beneficiaries ultimately would benefit from the removal of preferences and the extension of reciprocity (Ozden and Reinhardt 2005). In this sense some have questioned whether there actually were any benefits at all from trade preferences (DeRosa 2000).

The gradual elimination of preferential trading agreements suggests that these countries will have to make choices among alternative paths. The formation of EPAs and the elimination of longstanding trade arrangements between the OECS and its largest trading partners will indeed provide significant challenges for the group. However, beyond the challenges posed, these conditions present opportunities for restructuring their economies, development and institutional frameworks in the OECS countries.

The changes in economic environment centered on the elimination of trade preferences and the requisite of liberalization are of enormous significance. However, of equal or greater concern for the governments are potential fiscal impacts involved. Fears have been centered on tariff revenue losses and the links these might have to growth, development, and poverty

alleviation (Peters 2002). The implication is that adjustment costs will exist and that countries involved in EPA negotiations lack the conditions necessary to deal with these adjustment costs (Boormann, Grossmann and Koopmann 2006).

This significant change in the economic environment will require these countries to respond rapidly to external changes. An open world requires agility and the rapid adaptation to changing environments as well as the embrace of new technologies and opportunities. Integration and liberalization become necessary conditions to foster the acquisition of such skills to develop competitiveness. The relatively protective structure of the OECS and the one-way street of the system of preferential agreements do not seem to have not contributed in these larger pursuits.

Problem Statement

The problem posed by the gradual elimination of a system of non-reciprocal preferential trading agreements is clearly of significant concern for the OECS countries. On the one hand, such a situation creates opportunities to address and correct distortions created by unilateral trade preferences. Trade liberalization raises the issue of the selection of options available for these countries. They will have to decide what policy directions to pursue to minimize negative impacts and take advantage of opportunities preference erosion and liberalization presents. Choices available relate to: unilateral liberalization and reforms, integration with other small developing countries, integration within the larger trade bloc negotiations including the proposed Free Trade Agreement for the Americas (FTAA), full multilateral liberalization or the formation of Economic Partnership Agreements (EPA) with the European Union under the provisions of the Cotonou Agreement. The issue of how to proceed on the basis of what is likely to be most beneficial needs to be assessed. The strategies to be pursued in negotiations need to be evaluated in the context of costs and benefits different alternatives offer.

The economic analysis of customs unions or economic integration agreements suggests that the formation of a free trade agreement leads to a series of economic effects. A major trade effect is related to the expansion of trade due to underlying advantages driving the direction of trade. An expansion in trade can be expected when less efficient domestic production is substituted by imports from a more efficient member of the trade agreement. There can also be an expansion in trade flows due to the preferential access the agreement grants imports from member countries at the expense of excluding imports, which in fact can be less costly, from non-member countries (Viner 1950; Pomfret 1988).

Entering into an integration agreement or the expansion of existing agreements may either lead to gains or losses. Traditionally OECS countries have relied heavily on tariffs or trade related taxes as a source of revenues and significant fiscal impacts are expected as further trade liberalization proceeds. The fiscal impacts also have the potential to carry consequences for growth, development, poverty alleviation and provision of public goods. The alternatives posed by alternative integration agreements must be analyzed empirically and individually. The likely impact for the OECS of joining and EPA with the EU or the other options that may become available can be assessed with a partial equilibrium model. Such analysis would provide a framework to examine the likely trade effects and the fiscal implications for countries of the OECS.

Research Objectives

The objective of this dissertation is to evaluate and assess the trade effects and fiscal impacts of alternative trade liberalization scenarios for the OECS. An evaluation of such scenarios is timely as the OECS faces the prospect of joining an Economic Partnership Agreement with the European Union. The reciprocal nature of the agreement poses significant challenges and concerns for the group. Not only is it timely to evaluate the agreement with the

EU, but it also becomes essential to evaluate alternatives and their effects as the EPA excludes the OECS largest trading partners. Such exclusion can have unwelcome effects as they offer the potential for trade diversion.

Joining an EPA with the EU raises important questions. Is it in the interest of the OECS to enter an EPA? How large is the scope for trade diversion given the exclusion of major trading partners? How severe are the expected fiscal impacts? Are there other less exclusionary trade liberalization options more congruent with OECS interests? Is it in the interest of the OECS to even consider these alternatives? How large is the scope for trade diversion and trade creation under these alternative liberalization schemes? How severe are the fiscal impacts under these alternative scenarios? How do they compare with an EPA and among each other? These questions need to be analyzed empirically and individually.

To achieve the objective posed, highly disaggregated trade data will be used to quantitatively assess the impacts of alternative trade liberalization scenarios with a partial equilibrium trade model. The model is derived from Vinerian theory and was originally developed by Verdoorn (1960) as a means to analyze the integration of the BENELUX countries. The alternative trade scenarios proposed for examination begin with the evaluation of the OECS joining the proposed EPA with the EU. In this scenario, the complete elimination of existing import tariffs is contemplated, yet barriers for other countries are left intact. A second scenario will consist of the elimination of all tariff barriers to the Caribbean Community (CARICOM), including candidates for membership and associate members of the OECS. Hence, this scenario includes most of the Caribbean islands and the EU. The third scenario will add the members of NAFTA into the previous scenario. A final simulation envisages the OECS joining the now

stalled FTAA and will also include the EU as well in what would be a rather comprehensive liberalization scheme.

This study is concerned with the challenges that the OECS will face in the context of a changing economic environment. The likely impact of the alternatives proposed and an understanding of the implications posed by these scenarios will be addressed. Trade effects such as trade creation and trade diversion, as well as the fiscal effects of alternative trade liberalization scenarios should shed light on the benefits or costs of these types of arrangements.

The specific objectives of this study are:

- First, to qualitatively assess the economic and trade conditions of OECS members in the recent past and to review and assess methods for the analysis of preferential trading agreements.
- Second, to quantitatively assess trade effects and tariff revenue effects by performing alternative scenario analyses under different liberalization agreements with the use of highly disaggregated trade data. Trade creation, trade diversion and fiscal impact calculations of alternative scenarios shed light on the benefits or costs of these types of arrangements.
- Third, to assess the empirical results and what these suggest would be a prudent course of action for the OECS in light of theoretical contributions on regionalism and broader trade liberalization.

Organization of this Study

This study consists of five chapters. Following this brief introduction, chapter two reviews background information on the countries of the OECS, their economic history and the context of their evolution and current economic circumstances. Assessments of the conditions in 1980 and those of 2000 are made, which allow observing the relatively recent economic evolution of these countries. This context is necessary to better understand the implications of trade liberalization.

The third chapter overviews the literature on the trade and economic performance relationship so as to develop a sense of the implications involved in liberalization processes. The

trends in the debate in the last half of the twentieth are discussed, as are issues related to fiscal aspects of trade liberalization. Chapter 3 also reviews the theoretical foundations on preferential trading arrangements. The major quantitative frameworks or tools used in the empirical analysis of such arrangements are discussed.

Chapter 4 presents a more in depth examination of the partial equilibrium model based on Verdoorn (1960), a model derived from the Vinerian theoretical framework, which is employed in this analysis. The model is utilized in simulating the four previously outlined trade policy scenarios for the OECS. From such simulation results, answers to the previous questions are sought. Finally, final chapter 5 summarizes and concludes this study.

CHAPTER 2 ECONOMIC, STRUCTURAL AND TRADE CONTEXT OF THE OECS

The members of the Organization of Eastern Caribbean States (OECS), despite sharing many similarities, coexist with considerable diversity. The objective of this section is to provide a brief synopsis of the OECS and its member states, their geographic conditions, economic structure, and socioeconomic context. The composition of overall trade, trade in goods, and trading partners is presented for two time periods for each country. These descriptive statistics enhance the evaluation of context and recent economic evolution in these islands. The snapshots are intended to provide a background for the subsequent analysis, as this is necessary for an appropriate assessment of alternative trade policy options and their likely consequences.

Organization of Eastern Caribbean States

The Treaty of Basseterre established the Organization of Eastern Caribbean States in 1981.² The organization was formed, as a successor of the pre-independence West Indies Associated States Council of Ministers (WISA) and the Eastern Caribbean Common Market (ECCM), with the prime objective of pursuing economic integration and coordinating and cooperating in foreign policy. The specific objectives were to: promote regional and international cooperation among members; defend sovereignty, territorial integrity and independence; assist in meeting obligations and responsibilities to the international community; harmonize foreign policy and maintain arrangements for joint overseas representation; and promote economic integration among the member states. In effect, this included not only foreign policy coordination but also joint representation in trade agreements negotiations. Provisions for the administration of financial assistance granted by overseas sources were included as well.

² The section on the Organization of Eastern Caribbean States draws and summarizes material from various documents posted in its website at www.oecs.org. The material is also summarized in OECS (2002).

The promotion of cooperation in social, political, economic, and technical affairs among member states was termed the functional cooperation component. An example of such collaboration was the establishment of a monetary union with a single currency, the Eastern Caribbean Dollar (XCD), and the creation of the Eastern Caribbean Central Bank (ECCB) to coordinate such a union. Additional successful examples of functional cooperation were the Eastern Caribbean Supreme Court, the Eastern Caribbean Civil Aviation Authority, the Eastern Caribbean Telecommunications Authority, and the OECS Export Development Unit.

Beyond the coordination of foreign policy objectives and functional cooperation was the pursuit of further economic integration. This objective advanced significantly with the agreement to move toward an Economic Union. Coinciding with the twenty-fifth anniversary of the formation of the OECS, the Treaty of Basseterre was to be replaced by a new Economic Union Treaty. It is hoped this move will address shortcomings of the previous arrangements and enhance economic competitiveness and diversification, promote investments, create employment opportunities, as well as address a host of other economic objectives.

The OECS is further integrated within the region as an important subset of the larger Caribbean Community (CARICOM) that includes 15 members. Besides the OECS member nations CARICOM includes the Bahamas, Barbados, Belize, Guyana, Haiti, Jamaica, Suriname, and Trinidad and Tobago. The objectives of the OECS fit within those of the larger Caribbean Community. Overall regional integration arrangements such as CARICOM aimed at: enhancing growth and development and improving the standards of living of their populations; achieving full employment of labor and other factors of production; gaining accelerated, coordinated and sustained economic development and convergence; enhancing trade and economic relations with third states; attaining increased levels of international competitiveness; improving organization

for increased production and productivity; achieving of a greater measure of economic leverage; increased effectiveness of member states in dealing with third states, groups of states and entities of any description; and the enhanced coordination of member states' foreign and foreign economic policies and enhanced functional cooperation.³

Geographic and Economic Characteristics of OECS Members

The OECS member states are located in relatively close proximity to each other and generally share similar geographic and natural environments. Geography therefore tends to be a factor that influences the islands' production and export structure, one that has been considered limited in diversity and hampered by small physical and economic dimension.

In terms of physical size, total geographic surface area of all six OECS nation states is 2,806 sq km. The largest country is Dominica, which has a surface area of 754 sq km. The smallest member is St. Kitts and Nevis, which has a surface area of 261 sq km. The total population for the OECS is about 592,100. The most populous member is St. Lucia, which in 2005 had a population of about 165,500, while the least populous was St Kitts and Nevis with 48,000. In terms of economic size, the OECS had a combined GDP, in 2005, of \$3,177 million and a GDP per capita of \$5,886 (Table 2-1).

Smallness is reported by the World Bank (2005a) to have resulted in disadvantageous cost structures and diseconomies of scale, not only in production but also in the provision of public goods and an array of other factors. An export structure considered to lack diversity has also been attributed to the smallness of the economies. In addition, these small islands are considered extremely susceptible to changes in economic environment or any type of external economic

³ These objectives are cited and drawn from various CARICOM documents and also posted in the CARICOM website at www.caricom.org.

shocks. These characteristics are considered limiting factors in the ability of these small economies to fully integrate into the global economy.

Geographic Characteristics

Antigua and Barbuda: With a total surface area of 442 sq km, Antigua and Barbuda is located in the northernmost part of the OECS.⁴ Together they have 153 km of coastline with indented shorelines, natural harbors, and beaches. The islands are not endowed with significant natural resources and the terrain is classified as low-lying limestone and coral islands containing volcanic areas. A tropical maritime climate favors tourism, which is a major economic activity. Although it gained independence from Great Britain on November 1981, Antigua and Barbuda remain associated as a member of the Commonwealth. The islands are considered a constitutional monarchy with a parliament similar to that of the United Kingdom. Ethnic groups included in the estimated total population of 81,000 are Blacks, British, Portuguese, Syrian, and Lebanese.

Dominica: The island of Dominica was originally colonized by the French and was transferred to Great Britain in 1763. It gained independence in 1978 and its system of government is a parliamentary democracy. Dominica has a surface area of 754 sq km and a coastline of 148 km. Its climate is tropical, prone to heavy rainfall, and its terrain is classified as rugged and of volcanic origin. It is considered an interesting eco-tourism destination due to its significant endowment of natural beauty and diverse flora and fauna. However, it lacks beaches amenable to more traditional Caribbean tourism. The island has an estimated population of nearly 72,000. The general ethnic composition includes black, mixed black and European, European, Syrian and Carib Amerindian.

⁴ The information provided in this section for all countries was drawn from the CIA *The World Factbook*. <https://www.cia.gov/cia/publications/factbook/docs/profileguide.html>

Grenada: The French first colonized Grenada and transferred the island to British control in 1762. The French had established sugar estates and imported African slaves to run production. Grenada has a land surface area of 344 sq km, a shoreline of 121 km and a tropical climate that is tempered by northeast trade winds. Its terrain is characterized as volcanic, includes some mountains and its natural resource endowments include timber, tropical fruits and deepwater harbors. In 1974 Grenada gained independence and the government is now a constitutional monarchy with a parliament based on the Westminster system.

The country experimented briefly with a Marxist government that was overthrown by a US invasion. Although the service sector is the largest component of GDP, the country has had an important agricultural export sector. Export production cycles have included sugar, cacao, and nutmeg. The population was estimated at about 106,000 and the ethnic composition includes blacks, mixed black and European, European, East Indian, and some Arawak/Carib Amerindian.

St. Kitts and Nevis: St. Kitts and Nevis are the youngest of the independent member states in the OECS and they are also the smallest. The total surface area for the islands is 261 sq km. and its coastline extends for 135 km. Their climate is described as tropical but tempered by constant breezes and its terrain is volcanic and mountainous. The service sector is currently the largest component of GDP. However, for a long time sugar was by far the most important activity in the islands. Recently light manufacturing and assembling of electronic components have gained economic importance and practically replaced the sugar industry. The government is a constitutional monarchy with a parliament based on the Westminster system and the islands have a population of over 48,000. The ethnic composition consists of mainly black, with some British, Lebanese and Portuguese.

St. Lucia: The British and French contested the island of St. Lucia and control of the island changed fourteen times before it finally ended under British rule. St. Lucia gained its independence in 1979 it is a constitutional monarchy with a Westminster style parliament. St. Lucia has a surface area of 616 sq km, a coastline of 158 km. It is physically the largest of the OECS islands. Its climate is characterized as tropical with northeast trade winds and its terrain is mountainous and of volcanic origin. The island is endowed with sandy beaches, forests and some minerals. Banana exports are an important component of the agricultural export sector and recently services such offshore banking and tourism have grown significantly. Its population is estimated at about 165,500 and its ethnic composition is mostly black yet includes some mixed, East Indian, and white population.

St. Vincent and the Grenadines: St. Vincent and the Grenadines consist of 32 islands and cays with a total surface area of 389 sq km and a coastline of 84 km. Their climate is described as tropical and its terrain is characterized as mountainous and of volcanic origin. These islands were also part of territorial dispute between Britain and France that ended with the former exercising control until independence in 1979. Its government is a parliamentary democracy and independent sovereign state within the Commonwealth. St. Vincent and the Grenadines is an important banana exporter yet significant offshore banking activities and tourism industry have been developing. The islands have a population of slightly fewer than 119,000 with an ethnic composition that includes mainly blacks, and significant mixed, East Indian, Carib Amerindian, and other minorities.

Economic Structure and Characteristics

The members of the OECS, although sharing much in common, reveal a range of diversity in terms of their economic characteristics and performance that make each somewhat unique. In terms of size of GDP the largest economy is Antigua and Barbuda, which in 2005 had a GDP of

US\$ 905.2 million. Dominica had the smallest economy with a GDP of \$271.1 million. The average size of GDP for OECS countries stood at \$529.6 million. In terms of GDP per capita the group averaged \$5,886. The figures ranged from \$11,175 in Antigua and Barbuda to \$3,393 in St. Vincent and the Grenadines. The size of GDP and GDP per capita measures illustrate the heterogeneous character of economies within the OECS where some are up to three times as large as others (Table 2-1).

The sectoral composition of OECS economies is presented in Table 2-2 and similarly reflects common features as well as differences. The service sector is, for all OECS members, the most important component of GDP and its share averaged 69.3% in 2003. The service sector share ranged from 59.6% in Dominica to 76.6% in St. Lucia. Antigua and Barbuda saw a small decrease in its service sector from 1985 to 2002 when the share went from 78.5% to 75.7% of GDP. However, all other countries have experienced increases in the services component of national income. The largest increase for this sector occurred in St. Vincent and the Grenadines where in 1985 services comprised 56.9% of GDP while in 2004 the share was 66.8%.

Although the agricultural sector has traditionally been a very important part of Caribbean economies, a significant shift toward industry and services occurred during the past two decades. The sharpest decline in the agricultural sector participation took place in St. Kitts and Nevis where the sector's contribution to GDP fell from 9.1% in 1985 to 3.3% in 2003. Antigua and Barbuda had the smallest change in the size of their agricultural sector. The sector's decline in its contribution to GDP fell from 4.9% in 1985 to 3.8% in 2003. Despite the declining trend in the size of the agricultural sector throughout the OECS, agriculture remains relatively important in Dominica where it contributes 18.6% to GDP, the highest among these countries.

The industrial sector seems to have accumulated gains at the expense of the agricultural sector in all OECS members. While industry consisted of an average 19.0% of GDP in 1985 this figure stood at 23.1% in 2003. The largest increase in the share of industry took place in St. Kitts and Nevis where the sector grew from 21.7% in 1985 to 29.7% of GDP in 2003. This reflected a 36.6% increase in industrial activity. In St. Lucia, on the other hand, an almost negligible increase in industry share took place between 1985 and 2003. Industry share barely increased from 18.2% to 18.5%. This was clearly the exception to the trend, as shifts to the industrial sector in the other countries resembled those of St. Kitts, albeit in smaller proportions.

Recent Economic Trends

The OECS members also exhibit common elements and characteristics that are unfavorable. One such element that characterizes these economies is their high level of indebtedness. For the group as a whole, public debt in 2003 in terms of GDP weighted average stood at 113% of GDP. The most highly indebted country was St. Kitts and Nevis with a figure of 171 % while the lowest was St. Lucia with 69%. Government spending for the period between 1998-2003, in terms of GDP, averaged 34% for all six nations. These countries also maintained a negative fiscal balance, which averaged -6.4% of GDP. This negative fiscal balance ranged from -2.5% in St. Lucia to -11.2% in St. Kitts & Nevis (Table 2-3).

Although fiscal imbalances and high indebtedness have been a challenge for the OECS they were able to maintain price stability and the flow of funds from abroad. The average inflation rate between 1998 and 2003 was 1.7% and ranged from -0.3% to 2.5%. Foreign direct investment constitutes an important economic element for these countries averaging 9.1% of GDP. In addition, overseas development assistance (ODA) plays an important economic role and represented an average of 3.0% of GDP for the group.

The recent economic performance of OECS countries relative to past performance has been poor and rates of economic growth have been decreasing throughout the last quarter century. For the group of six OECS countries, the rate of growth in GDP during the 1980's averaged 5.9%. However, in the first half of the 1990s growth rates decreased to an average of 3.4%. Closer examination of the period between 1995 and 2005 reveals that economic performance has been somewhat erratic. During the first five years of the noted period the growth rate averaged 3.5% while this rate fell to 1.4% for the period between 2000 and 2004 (Table 2-4).

Higher income countries within the group have been able to maintain higher rates of growth than those with lower income. The rate of growth in GDP in Dominica went from 2.4% to -1.2% and from 5.6% to 1.0% in Grenada. In St. Kitts and Nevis this figure dropped from 4.4% to 2.2% and in St. Lucia from 2.6% to 0.5%. Antigua and Barbuda, as well as St. Vincent and the Grenadines maintained stable rates of growth at 3.2% and 2.8% respectively.

For the year 2005 growth performance improved and averaged 3.8% for the OECS. Notably, Dominica again experienced positive growth and St. Lucia achieved a growth rate exceeding the 5% mark. Although rates of growth for 2005 ranged from 5.1% in St. Lucia to 0.9% in Grenada, showing a significant improvement over the previous years, the slowdown is nonetheless evident when compared to similar figures from the early 1980s.

Another theme that has persisted and remains a source of challenges for the region regards unemployment and poverty.⁵ The average rate of unemployment for the OECS remains high at 16%. Unemployment was highest in Dominica with 25% while the lowest rate was in St. Kitts and Nevis with 5%. The population living in poverty averaged 29% for the six countries yet the

⁵ Figures for poverty and unemployment are from World Bank (2005a) which cites a UNDP 2002 report and a 2002 national poverty assessment and labor force surveys.

range within the group was broad. The highest rate of poverty was reported in St. Vincent and the Grenadines where 38% of the population lived in poverty. The lowest figure was reported in Antigua and Barbuda where the figure stood at 12%.

The overall standard of living for the OECS as reflected by the United Nations Human Development Index (HDI) also indicates diversity within the OECS. Although all countries within the group were classified as high or medium development countries, St. Kitts and Nevis ranked highest at 51 and St. Vincent and the Grenadines ranked lowest at 88.

Trade and Trade Structure

OECS countries are highly integrated into the world economy and international commerce occupies a sizable share of GDP. In fact, the ratio of imports and exports to GDP is above one for all OECS members (Table 2-5). Antigua and Barbuda had the highest ratio during the 1990s, 1.672. However, this ratio decreased to 1.331 during the present decade. A similar decrease in the ratio of exports and imports to GDP during this decade relative to the 1990s was observed in all OECS countries with Grenada being the exception.

The export of goods and services in the OECS consists predominantly of trade in services. While during the 1980s OECS export of services averaged slightly less than 50% of total exports, in the 1990s they constituted about 69% of all exports. For the time period between 2000-2004 exports of services increased to slightly less than 75% of total exports.

The trend of increased service sector exports has been consistent for all OECS countries. However, it has been remarkable for Dominica and St. Vincent and the Grenadines. While services accounted for 27.0% and 32.0% of total exports respectively during the 1980's, these increased, in the present decade, to 64.5% and 75.9% of total exports respectively (Table 2-6). In terms of import of services, these have increased from 21.5% to 30.2% of total imports during the same time period. Although a relatively small part of total imports, it is nonetheless

noteworthy that in terms of flows, imports of services have more than tripled in the interval between 1980 and 2004 (Table 2-7).

Though trade in services is pertinent, most of the analysis and discussion that follows addresses trade in goods, given that trade policy effects are more visible and data is easily available. The general trend over the past two decades for the OECS reveals a decrease in the importance of export goods relative to total exports, despite the fact that in terms of value export of goods increased.

The total value of export of goods for the OECS increased from a yearly average, in the 1980s, of \$239.5 to \$330.8 in the 1990's and a slight decline to \$317.8 million in the first half of the present decade. However, this trend has not been uniform for all OECS countries. The cases of Dominica and St. Lucia are particularly disconcerting, as exports of goods have actually decreased in the interval from the 1980s to the present decade. St. Lucia, after experiencing export growth during the 1990s, saw a decline of 57% in the export of goods during the period from 2000 to 2004. Dominica saw an increase in exports during the 1990s and a decline, albeit small, from 2000 to 2004.

In terms of the share of total exports, there has been a decline of about 50% in goods exported. While during the 1980s goods consisted of 50.1% of total exports, from 2000 to 2004 these averaged 25.2%. The relative decrease of exports was quite severe in St. Lucia and St. Vincent and the Grenadines where the decrease was in excess of 60%. Also significant decreases of slightly over 50% were experienced in Antigua and Barbuda as well as Dominica. Similarly the relative importance of export goods in terms of GDP decreased from 29.5% to 12.3% for the time frame included (Table 2-8).

The import of goods into the OECS is large relative to the size of the economies. While during the 1980s import of goods comprised almost 65% of GDP, from 2000 to 2004 this figure fell to 46.8% of GDP. In terms of value, imports increased from \$563.50 million to \$1.33 billion during the noted interval (Table 2-9). Increases were particularly notable in Grenada and St. Kitts and Nevis where imports nearly tripled.

The evolution of the structure of trade presented in aggregate terms portrays merely a general representation. A more detailed description of the structure of trade in goods and how it has evolved over the past two decades is better evaluated at a higher level of disaggregation. The evolution of the structure of trade is described with data from the U.N. Comtrade database using the SITC-1 classification at the four-digit level for the years 1980 and 2000.⁶ Included are OECS export destinations and import sources.

Antigua and Barbuda: The export structure for Antigua and Barbuda in 1981⁷ indicates that three categories; printing, clothing and specialized manufactured goods comprised almost 60% of exports. The top ten exports made up 81.2% of all goods exported. The Herfindahl-Hirshman index (HHI), which measures industry concentration, was 0.144. Two decades later, the export sector was still dominated by manufactured goods yet there was some export diversification and telecommunications equipment was dominant with almost one third of all exports. The top ten categories comprised 59.1 % of total goods exported while the HHI was reduced to 0.111 (Table 2-10).

The major export markets for Antigua and Barbuda were other Caribbean Islands, the United States, United Kingdom and France. The top ten export destinations accounted for

⁶ While the classification system has been modified throughout the years, SITC-1 classification was used here for consistency, as data was available under this classification for the two periods noted.

⁷ Data was available for 1981 rather than 1980.

88.2% of total goods exports. In the interval between 1980 and 2000 there was a marked decrease in the relative importance of the United States as an export market. While in 1980 54.4% of exports were destined to the United States, in 2000 this figure declined to 19%. During this time interval the United Kingdom ranked first as export destination (Table 2-11).

The major import categories Antigua and Barbuda in 1980 consisted of different types of transportation equipment and vehicles, which amounted to nearly 10% of all imports. The top ten import categories, however, accounted for less than a quarter of all imports. In the year 2000 the top ten categories accounted for 35.6% of imports and were dominated by fuels, oils and greases, as well as by passenger cars and telecommunication equipment (Table 2-12). About half of the imported goods originated in the United States while another significant source was the oil producing Caribbean nation of Trinidad and Tobago (Table 2-13).

Dominica: Dominica has experienced significant growth in export flows and the structure of trade continues to be dominated by agricultural products and agro-industry. While in 1980 soap was the leading export followed by bananas, in 2000 this order was inverted. In addition, the relative importance of both products diminished as exports were diversified. While banana and soap exports accounted for more than 80% of total goods exported in 1980, they accounted for 50% in 2000. The HHI during this period changed from 0.348 and 0.152 respectively (Table 2-14).

Dominica's major export markets were in 1980, and remained in 2000, the United Kingdom and Jamaica where combined exports amounted to nearly 65% and 50% respectively for those years. The United States, France and other Caribbean islands were other important export markets and the destination of the remaining 50% of exports. The top ten export destinations accounted for 97.8% of total goods exports in 1980 and 92.9% in 2000 (Table 2-15).

The import structure in 1980 consisted, similar to Antigua and Barbuda, of different types of transportation equipment and engines. Other important categories were meal and flour of wheat or muslin, animal oils and fats, and fertilizer. The top ten import categories accounted for less than one third of all imports in 1980. In the year 2000 the top ten import categories were dominated by fuels, oils and greases, as well as by passenger cars, telecommunication equipment, poultry, and lumber (Table 2-16). The United States and United Kingdom were the main import sources in 1980 and by the year 2000 other important sources included Japan, Canada, the Netherlands, France and oil producing Trinidad and Tobago (Table 2-17).

Grenada: The major export categories for Grenada have undergone a moderate shift. While cocoa, spices, and bananas accounted for more than 85% of total goods exported in 1980, these constituted approximately 20% of export of goods in 2000.⁸ In the year 2000 electrical equipment and circuits, as well as office machines comprised 54% of exports while spices were relegated to 17.7% (Table 2-18).

The principal export markets in 1980 were the United Kingdom, Belgium-Luxembourg, and the Netherlands. Together these accounted for more than 66% of Grenada's export market. In 2000, however, the main export destination became the United States followed by Trinidad and Tobago and the United Kingdom. The top ten export destinations accounted for 94.0% of total goods exports in 1980 and 88.7% in 2000 (Table 2-19).

The major import sources in 1980 were the United States, Trinidad and Tobago, and the United Kingdom. These import sources remained unchanged in the year 2000 (Table 2-20). The major import categories consisted of different manufactured goods, transportation equipment, some agricultural products and fuels (Table 2-21). The structure of imports did not vary to a

⁸ The Comtrade data for 2000 is considerably different from 1999 and 2001 where the category 0752 spices is clearly the dominant export good.

great extent between the two decades and the top ten categories accounted for nearly one third of all imports.

St. Kitts and Nevis: Once dominated virtually in its entirety by the sugar industry, St. Kitts and Nevis experienced a significant change in export structure as sugar was relegated. While in 1980 sugar accounted for over 60% of exports, by the year 2000 it accounted for less than 18%. Instead, electrical circuitry and other electrical machinery and apparatus substituted sugar as the top export category accounting for more than half the exports. Despite the changes from agricultural based exports to light manufacturing, the concentration for the top ten exports remained relatively unchanged accounting for over 90% of exports (Table 2-22).

St. Kitts and Nevis major foreign markets were in 1980, as in 2000, the United States, the United Kingdom and Trinidad and Tobago where combined exports amounted to 86.5% and 89.6% respectively for those two years. The remaining export markets were other Caribbean islands and the top ten export destinations accounted for 96.2% of total goods exported in 1980 and 97.5% in 2000 (Table 2-23).

The import structure in 1980, similar to other OECS countries, consisted of different types of transportation equipment, different categories of manufactured goods, agricultural products, cement, lumber and fuels. The structure of imports did not vary greatly between 1980 and 2000 and the top ten import categories accounted for about one third of all imports (Table 2-24). The primary import sources, nearly 75% of total imports, were the United States, the United Kingdom, Trinidad and Tobago and Canada (Table 2-25).

St. Lucia: Bananas have been the dominant export good in St. Lucia throughout the past two decades. In fact, during this period banana exports have doubled and in the year 2000 accounted for more than half of the goods exported. From the top ten export categories in 1980

five have continued to be significant in 2000, although changes in their relative ranking were observed. Hence, beer, non-alcoholic beverages, paper bags, and clothing, together with bananas made up the top five exports. From 1980 through 2000 export concentration increased with an HHI of 0.084 and 0.287 respectively (Table 2-26).

The main export markets in 1980 were the United States and the United Kingdom who together accounted for more than half the exports. In 2000 the United Kingdom became the largest market accounting for nearly half of St. Lucia's exports while the United States accounted for 18.5%. The Caribbean islands were the destination for 26% of exports and the top ten export destinations accounted for almost 94% of total goods exported in 1980 and 2000 (Table 2-27).

The major sources of imports for St. Lucia throughout these two decades were the United States, Trinidad and Tobago, and the United Kingdom (Table 2-28). The major import categories consisted of fuels, transportation equipment, and different manufactured goods. The top ten categories accounted for about one quarter of all imports and the structure of imports did not change significantly during this time interval (Table 2-29).

St. Vincent and the Grenadines: The trade structure for export goods in St. Vincent and the Grenadines has been dominated throughout the last two decades by agricultural products. Bananas have traditionally been the major export and their share has changed by a mere 3 percentage points during this interval. Other important exports included were meal and flour of wheat or muslin, vegetable products, and items related to sailing vessels and non-alcoholic beverages. The top ten goods constituted about 82% of all export for both 1980 and 2000 and the HHI were 0.199 and 0.172 respectively (Table 2-30).

St. Vincent's major export markets in 1980 and in 2000 were the United Kingdom, Trinidad and Tobago and Barbados where combined exports amounted to about 80% and 55% respectively for the noted years. The United States was the fourth largest destination in 1980 but did not make the top ten in 2000. The top ten export markets accounted for 98.3 % in 1980 and for 88.8% in 2000. (Table 2-31).

The import structure in 1980 and 2000 consisted of different types of transportation equipment and engines. Other important categories were agricultural and food products. The top ten import categories accounted for about one third of all imports for both years. In the year 2000 major imports consisted of fuels and food products (Table 2-32). The United States, the United Kingdom and Trinidad and Tobago were the main import sources for St. Vincent and the Grenadines. (Table 2-33).

Discussion and Implications

Several broad generalizations emerge from these descriptive data. The economic performance of the OECS has been gradually deteriorating over time. In terms of growth, these countries suffered a setback relative to the 1980's. Despite this less than satisfactory performance McCarthy and Zanalda (1995), in an analysis of economic performance from 1980 to 1992 indicated OECS members have generally performed better relative to their larger counterparts in CARICOM.

The OECS members continue to struggle with issues such as poverty, high rates of unemployment and high levels of indebtedness. However, on other macroeconomic indicators such as monetary stability the OECS has performed well over time. Escaith (2001) noted that heavy dependence on trade and perceived vulnerability has led small countries to adopt prudent macroeconomic policies. In spite of this, declining rates of growth and an expansionary fiscal policy have resulted in weak macroeconomic performance, increased public debt and high fiscal

deficits. However, exchange rate stability and an independent monetary policy have been maintained.

The export sector has been growing yet the structure has been shifting towards services, which now constitute the largest export sector. Services have experienced considerable growth in the period examined. The export of goods has also increased for most countries; however, traditional exports are becoming increasingly less significant. In addition, there is considerable diversity in the OECS member's exports as well as a shift to non-traditional exports in most countries. Trade partners are also an important issue and it becomes clear that North America is generally the largest export market, as well as the most important source of imports. This pattern has been relatively consistent in the period examined.

The concern that the OECS countries have a weak export base concentrated in few exports hence severe implications are to be borne from trade negotiations. However, Lewis and Webster (2001) find that there is considerable diversity in the exports of Caribbean countries despite their similarity in resource endowment. Similar conclusions were reached by Berezin, Salehizadeh and Santana (2002), who indicated that there is extensive diversity in export specialization when considering product categories for most of the Caribbean.

The more recent trend that clearly shows a stagnating trend in the rates of economic growth and economic performance for the time period after 1992 is of significant concern. Despite the domestic protective structure in place and the preferences granted to OECS exports performance was disappointing. In fact, a World Bank reported that "past growth does not appear to have been driven by a strategic agenda for competitiveness. Rather it has been driven by special and preferential treatment on export trade and the sectoral reallocation of resources from agriculture to tourism, led by inflows of foreign direct investment"(World Bank 2005b, p.

6). The issue now becomes how performance will progress under a new trading environment and rules.

In the overall context it is clear that although OECS members share many similarities, they actually display a considerable range of diversity. Their geographic conditions and social context are similar and they share common concerns and similar problems. Yet their economic and trade structures, although exhibiting common elements, are actually distinctive. An understanding of these subtleties provides a contextual background for the analysis that follows. Such background is required for an appropriate assessment of alternative trade policy options and their likely consequences.

Table 2-1. Selected statistics

	Geographic size (in sq km)	Population (in '000s)	GDP 2005 (current \$ million)	GDP/capita 2005 (current \$ million)
Antigua & Barbuda	442	81.0	905.2	11,175
Dominica	754	72.0	271.1	3,765
Grenada	344	106.5	437.3	4,106
St. Kitts & Nevis	261	48.0	396.9	8,268
St. Lucia	616	165.5	763.2	4,611
St. Vincent & the Grenadines	389	119.1	404.1	3,393
Total OECS	2806	592.1	3177.8	
Avg. OECS	467.7	98.7	529.6	5,886.3

Source: WDI Online and CIA *The World Factbook*

Table 2-2. Sectoral composition of OECS economies

	Agriculture (%)			Industry (%)			Services (%)		
	1985	1995	2003	1985	1995	2003	1985	1995	2003
Antigua & Barbuda	4.94	3.88	3.82*	16.57	18.35	21.97*	78.49	76.30	75.66*
Dominica	27.95	18.88	18.58	16.62	21.97	21.04	55.44	59.18	59.63
Grenada	17.08	10.13	8.47**	17.47	20.02	23.11**	65.45	69.86	68.42**
St. Kitts & Nevis	9.06	5.34	3.28	21.71	25.25	29.66	69.23	69.40	68.69
St. Lucia	15.22	10.19	6.40	18.18	19.48	18.50	66.60	70.33	76.59
St. Vincent & the Grenadines	19.60	14.08	8.88**	23.45	24.97	24.23**	56.95	60.96	66.78**
Avg. OECS	15.64	10.42	8.24	19.00	21.67	23.09	65.36	67.67	69.30

Source: WDI Online *=2002 Data, **=2004 Data

Table 2-3. Selected public and monetary sector indicators 1998-2003

	Government Spending (% of GDP)	Fiscal Balance (% of GDP)	Public Debt (% of GDP)	Inflation (% Rate)	Overseas Development Assistance (% of GDP)	Foreign Direct Investment (% of GDP)
Antigua & Barbuda	29	-7.9	142	1.8	1.6	6.3
Dominica	41	-8.2	122	-0.3	7.2	5.4
Grenada	37	-7.1	113	2.1	2.8	13.6
St. Kitts & Nevis	43	-11.2	171	2.5	3.2	20.3
St. Lucia	29	-2.5	69	2.1	2.8	3.2
St. Vincent & the Grenadines	33	-3.5	73	0.9	3.4	11.9
OECS Average	34	-6.4	113	1.7	3.0	9.1

Source: World Bank (2005)

Table 2-4. Selected economic performance indicators

	Growth rate (%)	Poverty (% pop) ^a	Unemployment (% of Labor Force) ^b	HDI Rank ^c				
	1980-89	1990-94	1995-99	2000-04	2005			2006
Antigua & Barbuda	6.74	3.43	3.20	3.20	3.81	12	7	59
Dominica	6.28	2.20	2.35	-1.22	3.10	33	25	68
Grenada	5.00	1.46	5.56	1.01	0.90	32	13	85
St. Kitts & Nevis	6.06	3.55	4.36	2.15	4.92	31	5	51
St. Lucia	5.27	7.45	2.57	0.54	5.12	25	19	71
St. Vincent	5.77	2.06	2.74	2.75	4.90	38	21	88
OECS Avg.	5.85	3.36	3.46	1.41	3.79	38	16	

Sources: WDI Online and World Bank (2005a) Table 1 for a and b. World Bank (2005a) cites these figures as latest available from UNDP 2002 national poverty assessments and labor force surveys. UNDP is source for c. <<http://hdr.undp.org/hdr2006/statistics>>

Table 2-5. Export, imports and trade share

	Exports (% of GDP)	Imports (% of GDP)	X+M (%GDP)	Exports (% of GDP)	Imports (% of GDP)	X+M (% of GDP)
	1990-99	1990-99	1990-99	2000-04	2000-04	2000-04
Antigua & Barbuda	82.61	85.25	167.9	63.70	71.36	135.1
Dominica	52.92	67.88	120.8	47.25	61.32	108.6
Grenada	45.73	64.40	110.1	46.74	71.99	118.7
St. Kitts & Nevis	53.69	73.39	127.1	45.65	70.45	116.1
St. Lucia	63.34	71.01	125.0	54.22	65.59	119.8
St Vincent & the Grenadines	52.82	72.19	134.3	48.35	61.75	110.1

Source: ECLAC

Table 2-6. Exports of services 1980-2004

	Export of services (current million)			Export of services (%of total exports)			Export of services (%of GDP)		
	1980-89	1990-99	2000-04	1980-89	1990-99	2000-04	1980-89	1990-99	2000-04
Antigua & Barbuda	136.82	371.15	418.34	78.47	88.62	89.96	63.76	73.22	57.31
Dominica	12.35	61.54	82.26	27.00	53.18	64.49	12.33	28.15	30.47
Grenada	32.93	97.63	141.60	57.81	74.80	72.35	25.04	34.21	33.82
St. Kitts & Nevis	25.63	84.50	106.40	51.80	70.06	65.07	30.35	37.62	29.71
St. Lucia	74.55	240.50	306.60	52.26	70.61	81.09	21.62	29.86	36.68
St Vincent	24.71	77.91	135.20	31.95	56.52	75.85	36.84	44.72	43.97
OECS Total	306.99	933.21	1190.36						
OECS Avg.	51.17	155.54	198.39	49.88	68.97	74.80	31.66	41.29	38.66

Source: ECLAC and WDI Online

Table 2-7. Imports of services 1980-2004

	Imports of services (current million U\$)			Imports of services (% of imports)			Imports of services (% of GDP)		
	1980-89	1990-99	2000-04	1980-89	1990-99	2000-4	1980-89	1990-99	2000-04
Antigua & Barbuda	47.97	141.95	174.68	22.25	32.85	33.53	22.36	28.00	23.93
Dominica	13.15	42.60	49.32	18.96	28.70	29.79	13.13	19.48	18.27
Grenada	20.54	47.77	88.62	22.69	25.99	29.40	15.62	16.74	21.17
St. Kitts & Nevis	14.86	53.08	78.78	20.91	32.20	31.22	17.60	23.63	21.99
St. Lucia	40.05	108.15	138.16	22.45	28.32	30.21	19.79	20.11	19.82
St Vincent	20.56	54.54	61.62	21.50	28.95	27.07	17.99	20.90	16.72
OECS Total	157.13	448.09	591.18						
OECS Avg.	26.19	74.68	98.53	21.46	29.50	30.20	17.75	21.48	20.31

Source: ECLAC and WDI Online

Table 2-8. Average export of goods 1980-2004

	Export of goods (current million U\$)			Export of goods (% of exports)			Export of goods (% of GDP)		
	1980-89	1990-99	2000-04	1980-89	1990-99	2000-04	1980-89	1990-99	2000-04
Antigua & Barbuda	37.53	47.65	46.70	21.53	11.38	10.04	17.49	9.40	6.40
Dominica	33.39	54.17	45.30	73.00	46.82	35.51	33.35	24.77	16.78
Grenada	24.03	32.90	54.12	42.19	25.20	27.65	18.27	11.53	12.93
St. Kitts & Nevis	23.85	36.11	57.12	48.20	29.94	34.93	28.24	16.08	15.95
St. Lucia	68.09	100.09	43.04	47.74	29.39	18.91	33.65	18.61	10.25
St Vincent	52.63	59.93	71.50	68.05	43.48	24.15	46.04	22.97	11.68
Total OECS	239.50	330.85	317.78						
OECS Avg.	39.92	55.14	52.96	50.12	31.03	25.20	29.51	17.23	12.33

Source: ECLAC and WDI Online and calculations on the basis of the sources.

Table 2-9. Imports of goods 1980-2004

	Imports of goods (current U\$million)			Imports of goods (% of Imports)			Imports of goods (% of GDP)		
	1980-89	1990-99	2000-04	1980-89	1990-99	2000-04	1980-89	1990-99	2000-04
Antigua & Barbuda	167.7	290.22	346.26	77.75	67.15	66.47	78.14	57.25	47.73
Dominica	56.20	105.81	116.22	81.04	71.30	70.21	56.13	48.39	43.05
Grenada	69.97	136.03	212.78	77.31	74.01	70.60	53.21	47.66	50.82
St. Kitts & Nevis	56.21	111.77	173.58	79.09	67.80	68.78	66.56	49.76	48.46
St. Lucia	138.38	273.69	319.14	77.55	71.68	69.79	68.38	50.90	45.77
St Vincent	75.07	133.84	166.00	78.50	71.05	72.93	65.67	51.29	45.03
OECS Total	563.50	1051.36	1333.98						
OECS Avg.	93.92	175.23	222.33	78.54	70.50	69.80	64.68	50.88	46.76

Source: ECLAC and WDI Online

Table 2-10. Top ten export categories for Antigua and Barbuda

1980				2000		
No.	SITC-1 Code description	Value in US\$	Share	SITC-1 Code description	Value in US\$	Share
1	Printed matter, nes	9,841,693	28.81	Telecommunications equipment nes	7,202,746	31.99
2	Parts of aircraft, balloons airships	7,067,661	20.69	Construction and mining machinery, nes	1,075,079	4.77
3	Clothing of text fabric, not knitted crocheted	3,534,899	10.35	Prepared paints, enamels, lacquers, etc.	944,412	4.19
4	Domestic stoves, boilers, cookers, etc.	1,445,175	4.23	Tarpaulins, tents, awnings, sails, etc.	737,763	3.28
5	Clothing accessories of text.,not knitted/croch	1,344,458	3.94	Oth. Coated iron or steel plates etc under 3 mm	702,363	3.12
6	Furniture	1,308,246	3.83	Lighting fixtures and fittings and parts	637,132	2.83
7	Pumps and centrifuges	1,218,209	3.57	Statistical machines cards or tapes	582,678	2.59
8	Domestic electrical equipment	824,529	2.41	Phonographs, tape & other sound recorders etc.	476,435	2.12
9	Clothing and accessories, knitted or crocheted	572,062	1.67	Lorries and trucks, including ambulances,	475,557	2.11
10	Distilled alcoholic beverages	569,989	1.67	Internal combustion engines, not for aircraft	473,046	2.10
	Total Exports	34,159,496	81.17	Total Exports	22,518,130	59.10
	HHI		0.14	HHI		0.11

Source: Comtrade database

Table 2-11. Top ten export partners for Antigua and Barbuda

1980				2000		
No	Partner	Value in US\$	Share	Partner	Value in US\$	Share
1	USA	18,585,408	54.41	U.K.	4,431,357	19.68
2	U.K.	4,219,323	12.35	USA	4,285,835	19.03
3	Trinidad & Tobago	4,121,765	12.07	Saint Vincent	3,131,305	13.91
4	Barbados	2,129,021	6.23	Neth. Antilles	1,715,059	7.62
5	Jamaica	942,318	2.76	St Kitts	1,576,270	7.00
6	Saint Lucia	803,111	2.35	Montserrat	1,511,579	6.71
7	Saint Kitts	660,018	1.93	Barbados	1,123,316	4.99
8	Canada	591,247	1.73	Saint Lucia	785,037	3.49
9	Dominica	503,290	1.47	Dominica	654,811	2.91
10	Montserrat	477,034	1.40	France	636,641	2.83
	World	34,159,496	96.70	World	22,518,130	88.16

Source: Comtrade database

Table 2-12. Top ten import categories for Antigua and Barbuda

No.	SITC-1 Code description	1981		SITC-1 Code description	2000	
		Value in US\$	Share		Value in US\$	Share
1	Internal combustion engines, not for aircraft	4,508,656	4.07	Motor spirit, gasolene and other light oils	23,704,726	7.01
2	Passenger motor cars, other than buses	3,282,988	2.96	Lamp oil and white spirit	17,913,335	5.30
3	Parts of aircraft, balloons airships	2,902,347	2.62	Telecommunications equipment nes	15,612,531	4.62
4	Parts and accessories of machinery, nes	2,542,288	2.29	Passenger motor cars, other than buses	13,544,477	4.01
5	Lumber, sawn, planed, etc. Conifer	2,495,685	2.25	Lubricating oils and greases	11,309,630	3.34
6	Cement	2,344,099	2.12	Statistical machines cards	9,443,228	2.79
7	Poultry, incl. offals ex.liver fresh, chilled, frozen	2,221,386	2.00	Food preparations,n.e.s.	8,888,851	2.63
8	Mechanical handling equipment	2,046,034	1.85	Furniture	6,908,666	2.04
9	Electric lamps	1,814,712	1.64	Non alcoholic beverages,n.e.s.	6,905,172	2.04
10	Aircraft incl jet propulsion eng.	1,654,162	1.49	Articles of artif.plastic materials,n.e.s.	6,095,044	1.80
	Total Imports	110,823,296	23.29	Total Imports	338,180,424	35.58
	HHI		0.006	HHI		0.0152

Source: Comtrade database

Table 2-13. Top ten import partners for Antigua and Barbuda

No.	Partner	1981		Partner	2000	
		Value in US\$	Share		Value in US\$	Share
1	USA	53,408,632.	48.19	USA	166,642,723	49.28
2	U.K.	22,600,768	20.39	Neth Antilles	40,410,306	11.95
3	Canada	7,102,305	6.41	U.K	25,003,251	7.39
4	Japan	6,313,484	5.69	Trinidad	21,629,038	6.40
5	Trinidad	3,512,315	3.17	Canada	12,516,855	3.70
6	Jamaica	1,888,384	1.70	Venezuela	11,315,813	3.35
7	Barbados	1,738,832	1.57	Japan	10,509,584	3.11
8	Guyana	1,291,036	1.16	Barbados	5,465,650	1.62
9	Honduras	1,140,589	1.03	Saint Vincent	3,210,880	0.95
10	Saint Vincent	1,105,266	0.99	France	3,194,118	0.94
	World	110,823,296	90.33	World	338,180,424	88.68

Source: Comtrade database

Table 2-14. Top ten export categories for Dominica

No.	SITC-1 Code description	1980		SITC-1 Code description	2000	
		Value in US\$	Share		Value in US\$	Share
1	Soaps	4,855,892	49.85	Bananas including plantains, fresh	13,522,695	25.24
2	Bananas including plantains, fresh	3,033,085	31.14	Soaps	13,481,115	25.16
3	Coconut copra oil	373,188	3.83	Perfumery & cosmetics, dentifrices	7,423,795	13.86
4	Food preparations, n.e.s.	120,660	1.24	Surface acting agents and washing preparations	2,049,827	3.83
5	Construction and mining machinery, nes	111,924	1.15	Insecticides, fungicides, disinfectants	1,873,305	3.50
6	Vegetable products, chiefly for human food nes	110,285	1.13	Prepared paints, enamels, lacquers, etc.	1,693,200	3.16
7	Essential oils and resinoids	99,079	1.02	Vegetable products, chiefly for human food nes	1,553,919	2.90
8	Lorries and trucks, including ambulances, etc.	97,221	1.00	Food Preparations	1,309,228	2.44
9	Mats, matting, screens of vegetable plaiting mat	79,938	0.82	Sand excluding metal bearing sand	1,152,873	2.15
10	Other fresh vegetables	45,901	0.47	Essential oils and resinoids	1,071,457	2.00
	Total Exports	9,741,258	91.64	Total Exports	53,581,980	84.23
	HHI		0.35	HHI		0.15

Source: Comtrade database

Table 2-15. Top ten export partners for Dominica

No.	Partner	1980		Partner	2000	
		Value in US\$	Share		Value in US\$	Share
1	U.K.	3,375,169	34.65	U.K.	12,849,820	23.98
2	Jamaica	3,004,933	30.85	Jamaica	12,819,347	23.92
3	Saint Lucia	615,885	6.32	France	3,994,511	7.45
4	Barbados	526,343	5.40	USA	3,973,478	7.42
5	Trinidad & Tobago	446,673	4.59	Antigua & Barbuda	3,943,468	7.36
6	Saint Vincent	420,235	4.31	Guyana	3,351,847	6.26
7	Grenada	394,267	4.05	Trinidad & Tobago	2,782,717	5.19
8	Antigua & Barbuda	319,199	3.28	Barbados	2,491,700	4.65
9	Guadeloupe	219,256	2.25	Saint Kitts	2,029,330	3.79
10	Saint Kitts & Nevis	205,127	2.11	Saint Lucia	1,541,308	2.88
	World	9,741,258	97.80	World	53,581,980	92.90

Source: Comtrade database

Table 2-16. Top ten import categories for Dominica

No.	SITC-1 Code description	1980		SITC-1 Code description	2000	
		Value in US\$	Share		Value in US\$	Share
1	Lorries and trucks, including ambulances, etc.	2,550,055	5.35	Distillate fuels	5,634,548	3.80
2	Motor spirit, gasolene and other light oils	1,899,995	3.99	Motor spirit, gasolene and other light oils	5,470,479	3.69
3	Meal and flour of wheat or of meslin	1,698,536	3.56	Lorries and trucks, including ambulances,	5,248,942	3.54
4	Lumber, sawn, planed, etc. Conifer	1,469,914	3.08	Articles of artif.plastic materials,	4,810,409	3.25
5	Animal oils, fats and greases, excl. lard	1,464,963	3.07	Telecom equipment	4,498,186	3.04
6	Passenger motor cars, other than buses	1,183,647	2.48	Passenger motor cars, other than buses	4,144,618	2.80
7	Nitrogenous fertilizers and materials	1,145,474	2.40	Poultry,incl.offals ex.liver fresh,chilled,froz	3,326,068	2.24
8	Paper bags, paperboard boxes & other containers	1,073,078	2.25	Statistical machines cards or tapes	2,723,694	1.84
9	Distillate fuels	1,072,648	2.25	Electric power machinery	2,648,025	1.79
10	Universals etc. Of iron steel,over 4.75 mm	988,997	2.07	Lumber, sawn, planed, etc. Conifer	2,581,214	1.74
	Total Imports	47,676,048	30.51	Total Imports	148,162,112	27.73
	HHI		0.10	HHI		0.01

Source: Comtrade database

Table 2-17. Top ten import partners for Dominica

No.	Partner	1980		Partner	2000	
		Value in US\$	Share		Value in US\$	Share
1	USA	12,669,831	26.57	USA	55,272,472	37.31
2	U.K.	11,000,445	23.07	Trinidad	24,221,086	16.35
3	Trinidad & Tobago	3,945,720	8.28	U.K.	11,408,160	7.70
4	Japan	2,642,576	5.54	Japan	9,261,288	6.25
5	Canada	1,967,431	4.13	Canada	6,232,378	4.21
6	Barbados	1,918,926	4.02	Barbados	4,701,299	3.17
7	Saint Lucia	1,698,289	3.56	Netherlands	3,196,610	2.16
8	Antigua & Barbuda	1,695,272	3.56	France	2,849,656	1.92
9	Saint Vincent & the Grenadines	1,325,137	2.78	Venezuela	2,730,249	1.84
10	Guyana	966,872	2.03	Saint Lucia	2,431,185	1.64
	World	47,676,048	83.54	World	148,162,112	82.55

Source: Comtrade database

Table 2-18. Top ten exports categories for Grenada

No.	SITC-1 Code description	1980		SITC-1 Code description	2000	
		Value in US\$	Share		Value in US\$	Share
1	Cocoa beans,raw or roasted	6,755,209	38.85	Office machines, nes	13,716,717	18.09
2	Bananas including plantains, fresh	4,109,714	23.64	Apparatus for electrical circuits	13,705,099	18.07
3	Spices, exc. Pepper & pimento ground or not	3,951,729	22.73	Electrical insulating equipment	13,703,688	18.07
4	Clothing of text fabric, not knitted crocheted	878,262	5.05	Spices, exc. Pepper & pimento ground or not	13,421,138	17.70
5	Furniture	298,669	1.72	Meal and flour of wheat or of meslin	4,573,002	6.03
6	Fresh fruit,nes	280,030	1.61	Fish, fresh, chilled or frozen	3,388,503	4.47
7	Meal and flour of wheat or of meslin	214,543	1.23	Art. Of paper pulp,paper or paperboard	1,845,927	2.43
8	Domestic stoves, boilers, cookers, etc. Nes	101,840	0.59	Cocoa beans,raw or roasted	1,590,848	2.10
9	Food wastes & prepared animal feed,nes	100,557	0.58	Food wastes & prepared animal feed	1,210,462	1.60
10	Passenger motor cars, other than buses	84,591	0.49	Machinery and mechanical appliances,	885,726	1.17
	Total Exports	17,387,300	96.48	Total Exports	75,843,520	89.71
	HHI		0.26	HHI		0.14

Source: Comtrade database

Table 2-19. Top ten export partners for Grenada

No.	Partner	1980		Partner	2000	
		Value in US\$	Share		Value in US\$	Share
1	U.K.	7,427,658	42.72	USA	35,995,324	47.46
2	Belgium-Luxembourg	2,419,534	13.92	Ireland	12,409,088	16.36
3	Netherlands	1,758,410	10.11	Germany	3,798,912	5.01
4	Germany	1,370,512	7.88	Netherlands	3,145,957	4.15
5	Trinidad	1,355,843	7.80	Saint Lucia	2,600,232	3.43
6	USA	598,350	3.44	France	2,366,800	3.12
7	Canada	563,140	3.24	Dominica	1,904,572	2.51
8	Barbados	324,131	1.86	Barbados	1,763,848	2.33
9	Argentina	304,227	1.75	Antigua	1,745,069	2.30
10	Spain	215,529	1.24	Saint Kitts	1,527,901	2.01
	World	17,387,300	93.96	World	75,843,520	88.68

Source: Comtrade database

Table 2-20. Top ten import categories for Grenada

No.	SITC-1 Code description	1980		SITC-1 Code description	2000	
		Value in US\$	Share		Value in US\$	Share
1	Distillate fuels	2,716,059	5.41	Apparatus for electrical circuits	19,405,356	8.13
2	Motor spirit, gasolene & other light oils	2,561,791	5.10	Distillate fuels	10,444,317	4.37
3	Passenger motor cars, other than buses	1,570,958	3.13	Articles of artif.plastic materials,n.e.s.	8,410,481	3.52
4	Lumber, sawn, planed, etc. Conifer	1,546,678	3.08	Passenger motor cars, other than buses	7,254,193	3.04
5	Wheat and meslin,unmilled	1,400,035	2.79	Motor spirit, gasolene & other light oils	6,799,321	2.85
6	Poultry,incl.offals ex.liver fresh,chilled,froz	1,277,445	2.54	Telecommunications equipment nes	5,734,471	2.40
7	Clothing of text fabric, not knitted crocheted	1,271,830	2.53	Electric power machinery	5,348,241	2.24
8	Lorries and trucks, including ambulances, etc.	1,235,221	2.46	Statistical machines cards or tapes	5,334,817	2.23
9	Raw sugar,beet & cane	1,143,786	2.28	Poultry,incl.offals ex.liver fresh,chilled,froz	5,042,315	2.11
10	Paper bags, paperboard boxes & other containers	1,142,275	2.27	Furniture	4,999,068	2.09
	Total Imports	50,210,848	31.60	Total Imports	238,771,872	32.99
	HHI		0.01	HHI		0.01

Source: Comtrade database

Table 2-21. Top ten import partners for Grenada

No.	Partner	1980		Partner	2000	
		Value in US\$	Share		Value in US\$	Share
1	USA	9,997,731	19.84	USA	107,509,784	45.03
2	Trinidad	9,960,460	17.81	Trinidad	44,472,784	18.63
3	United Kingdom	8,941,190	5.65	United Kingdom	21,035,236	8.81
4	Canada	2,837,417	5.25	Japan	9,981,254	4.18
5	Japan	2,634,613	3.78	Canada	6,275,646	2.63
6	Barbados	1,897,820	2.96	Barbados	5,405,305	2.26
7	Areas, nes	1,487,784	2.50	Germany	5,081,622	2.13
8	Guyana	1,256,523	2.22	Venezuela	2,702,051	1.13
9	Jamaica	1,113,453	2.02	Honduras	2,594,068	1.09
10	Cuba	1,014,029	1.97	Guyana	2,322,095	0.97
	World	50,210,848	64.00	World	238,771,872	86.85

Source: Comtrade database

Table 2-22. Top ten export categories for St. Kitts and Nevis

No.	SITC-1 Code description	1980		SITC-1 Code description	2000	
		Value in US\$	Share		Value in US\$	Share
1	Raw sugar,beet & cane	14,728,307	60.71	Apparatus for electrical circuits	17,197,300	52.79
2	Footwear	2,383,668	9.83	Raw sugar,beet & cane	5,853,810	17.97
3	Clothing of text fabric, not knitted crocheted	1,522,639	6.28	Electrical machinery and apparatus, nes	1,529,457	4.69
4	Electric power machinery	747,779	3.08	Non-alcoholic beverages	1,039,501	3.19
5	Mechanical handling equipment	666,819	2.75	Electric power machinery	984,289	3.02
6	Uppers,legs & other prepared parts of footwear	526,188	2.17	Articles of artif plastic materials	907,047	2.78
7	Television broadcast receivers	411,133	1.69	Ships and boats, other than warships	878,631	2.70
8	Electrical machinery and apparatus, nes	330,287	1.36	Clothing of text fabric, not knitted crocheted	661,099	2.03
9	Molasses	325,912	1.34	Food preparations nes	404,922	1.24
10	Beer including ale,stout,porter	286,579	1.18	Telecommunications equipment nes	294,642	0.90
	Total Exports	24,261,152	90.39	Total Exports	32,579,584	91.32
	HHI		0.39	HHI		0.32

Source: Comtrade database

Table 2-23 Top ten export partners for St. Kitts and Nevis

No.	Partner	1980		Partner	2000	
		Value in US\$	Share		Value in US\$	Share
1	USA	11,830,032	48.76	USA	21,556,126	66.16
2	United Kingdom	7,132,415	29.40	United Kingdom	6,779,476	20.81
3	Trinidad and Tobago	2,019,082	8.32	Trinidad and Tobago	854,585	2.62
4	Barbados	441,166	1.82	Saint Lucia	661,159	2.03
5	Antigua & Barbuda	384,003	1.58	Br. Virgin Isds	481,727	1.48
6	Jamaica	381,097	1.57	Dominica	473,788	1.45
7	Montserrat	336,266	1.39	Neth. Antilles	370,034	1.14
8	Netherlands	330,113	1.36	Barbados	254,372	0.78
9	Guadeloupe	267,745	1.10	Antigua and Barbuda	164,127	0.50
10	Anguilla	228,079	0.94	Anguilla	159,287	0.49
	World	24,261,152	96.24	World	32,579,584	97.47

Source: Comtrade database

Table 2-24. Top ten import categories for St. Kitts and Nevis

No.	SITC-1 Code description	1980		SITC-1 Code description	2000	
		Value in US\$	Share		Value in US\$	Share
1	Distillate fuels	2,642,346	5.54	Articles of artif.plastic materials,n.e.s	10,462,298	5.35
2	Clothing of text fabric, not knitted crocheted	2,486,273	5.21	Distillate fuels	8,527,153	4.36
3	Motor spirit, gasolene and other light oils	1,490,743	3.13	Passenger motor cars, other than buses	6,938,988	3.55
4	Passenger motor cars, other than buses	1,435,285	3.01	Apparatus for electrical circuits	6,037,513	3.08
5	Poultry,incl.offals ex.liver fresh,chilled,froz	1,223,958	2.57	Telecommunications equipment nes	5,902,019	3.02
6	Clothing accessories of text.,not knitted/croch	1,063,063	2.23	Furniture	5,377,826	2.75
7	Milk & cream evaporated or condensed	1,018,011	2.13	Electrical machinery and apparatus, nes	4,400,457	2.25
8	Meal and flour of wheat or of meslin	929,968	1.95	Motor spirit, gasolene and other light oils	4,334,538	2.21
9	Cement	882,500	1.85	Food preparations,n.e.s.	4,296,866	2.20
10	Uppers,legs & other prepared parts of footwear	684,956	1.44	Lumber, sawn, planed, etc. Conifer	3,772,388	1.93
	Total Imports	47,690,840	29.06	Total Imports	195,726,736	30.68
	HHI		0.01	HHI		0.01

Source: Comtrade database

Table 2-25. Top ten import partners for St. Kitts and Nevis

No.	Partner	1980		Partner	2000	
		Value in US\$	Share		Value in US\$	Share
1	USA	18,211,402	38.19	USA	111,390,600	56.91
2	U.K.	8,218,385	17.23	Trinidad	24,973,912	12.76
3	Trinidad	5,653,257	11.85	Canada	14,904,888	7.62
4	Canada	3,128,364	6.56	U.K.	11,864,909	6.06
5	Japan	1,727,167	3.62	Japan	7,279,639	3.72
6	Barbados	1,339,499	2.81	Barbados	4,938,508	2.52
7	Dominican Rep.	1,207,310	2.53	Jamaica	1,852,395	0.95
8	Saint Vincent	929,544	1.95	Neth. Antilles	1,549,007	0.79
9	Neth. Antilles and Aruba	856,306	1.80	France	1,463,036	0.75
10	Jamaica	720,781	1.51	Grenada	1,359,791	0.69
	World	47,690,840	88.05	World	195,726,736	92.77

Source: Comtrade database

Table 2-26. Top ten export categories for St. Lucia

No.	SITC-1 Code description	1980		SITC-1 Code description	2000	
		Value in US\$	Share		Value in US\$	Share
1	Bananas including plantains, fresh	10,549,141	22.93	Bananas including plantains, fresh	21,835,884	50.35
2	Construction and mining machinery, nes	4,402,992	9.57	Beer including ale, stout, porter	6,645,011	15.32
3	Universals etc. Of iron or steel, over 4.75 mm	4,253,179	9.25	Apparatus for electrical circuits	2,606,230	6.01
4	Apparatus for electrical circuits	3,930,205	8.54	Clothing and accessories, knitted or crocheted	2,595,521	5.99
5	Coconut copra oil	2,943,961	6.40	Non alcoholic beverages	1,486,601	3.43
6	Childrens toys, indoor games, etc.	2,936,568	6.38	Paper bags, paperboard boxes & other containers	1,136,401	2.62
7	Paper bags, paperboard boxes & other containers	2,597,229	5.65	Passenger motor cars, other than buses	833,155	1.92
8	Clothing and accessories, knitted or crocheted	2,033,184	4.42	Measuring, controlling & scientific instruments	761,663	1.76
9	Beer including ale, stout, porter	1,523,197	3.31	Fresh fruit, nes	611,154	1.41
10	Non alcoholic beverages	1,106,359	2.41	Thermionic valves and tubes, transistors, etc.	422,248	0.97
	Total Exports	45,995,899	78.87	Total Exports	43,365,940	89.78
	HHI		0.09	HHI		0.29

Source: Comtrade Database

Table 2-27. Top ten export partners for St. Lucia

No.	Partner	1980		Partner	2000	
		Value in US\$	Share		Value in US\$	Share
1	USA	12,704,015	27.62	U.K	22,092,980	50.95
2	U.K	11,552,527	25.12	USA	8,032,507	18.52
3	US Virgin Isds	4,901,576	10.66	Barbados	4,771,217	11.00
4	Jamaica	4,209,312	9.15	Antigua	1,917,419	4.42
5	Trinidad	2,823,393	6.14	Grenada	1,266,026	2.92
6	Barbados	2,016,432	4.38	Dominica	1,160,456	2.68
7	Dominica	1,763,122	3.83	Trinidad	713,520	1.65
8	Grenada	1,223,977	2.66	Saint Vincent	419,962	0.97
9	Saint Vincent	1,105,584	2.40	Saint Kitts	415,858	0.96
10	Guyana	954,089	2.07	Guyana	343,556	0.79
	World	45,995,899	94.04	World	43,365,940	94.85

Source: Comtrade database

Table 2-28. Top ten import categories for St. Lucia

No.	SITC-1 Code description	1980		SITC-1 Code description	2000	
		Value in US\$	Share		Value in US\$	Share
1	Distillate fuels	6,467,143	5.23	Distillate fuels	15,541,155	4.38
2	Apparatus for electrical circuits	5,385,403	4.35	Motor spirit, gasolene and other light oils	12,348,192	3.48
3	Motor spirit, gasolene and other light oils	4,331,396	3.50	Passenger motor cars, other than buses	9,865,513	2.78
4	Articles of artif.plastic materials,n.e.s	3,968,587	3.21	Telecommunications equipment nes	9,222,663	2.60
5	Lumber, sawn, planed, etc. Conifer	2,908,290	2.35	Articles of artif.plastic materials,n.e.s	8,801,031	2.48
6	Poultry,incl.offals ex.liver fresh,chilled,froz	2,599,776	2.10	Electric power machinery	8,136,605	2.29
7	Passenger motor cars, other than buses	2,500,016	2.02	Furniture	8,026,679	2.26
8	Kraft paper and kraft paperboard	2,382,807	1.93	Poultry,incl.offals ex.liver fresh,chilled,froz	7,664,315	2.16
9	Lorries and trucks, including ambulances, etc.	2,299,469	1.86	Statistical machines cards or tapes	6,966,812	1.96
10	Builders woodwork & prefab. Buildings of wood	2,229,493	1.80	Lumber, sawn, planed, etc. Conifer	6,505,689	1.83
	Total Imports	123,757,309	28.34	Total Imports	355,045,920	26.22
	HHI		0.01			0.01

Source: Comtrade database

Table 2-29. Top ten import partners for St. Lucia

No.	Partner	1980		Partner	2000	
		Value in US\$	Share		Value in US\$	Share
1	USA	39,385,617	31.82	USA	146,406,432	41.24
2	U.K.	19,312,693	15.61	Trinidad & Tobago	51,177,552	14.41
3	Trinidad & Tobago	15,176,403	12.26	U.K.	30,066,484	8.47
4	Japan	7,007,962	5.66	Japan	15,963,361	4.50
5	Canada	5,141,559	4.15	Canada	13,589,188	3.83
6	Venezuela	4,591,932	3.71	Barbados	10,071,553	2.84
7	Barbados	3,975,435	3.21	France	9,097,107	2.56
8	Netherlands	2,914,549	2.36	China	8,054,802	2.27
9	Guyana	2,527,605	2.04	Finland	6,524,266	1.84
10	Jamaica	2,281,156	1.84	Germany	4,780,844	1.35
	World	123,757,309	82.67	World	355,045,920	83.29

Source: Comtrade database

Table 2-30. Top ten export categories for St. Vincent and the Grenadines

No.	SITC-1 Code description	1980		SITC-1 Code description	2000	
		Value in US\$	Share		Value in US\$	Share
1	Bananas including plantains fresh	6,485,892	41.20	Bananas including plantains, fresh	19,055,994	37.67
2	Vegetable products,chiefly for human food nes	1,972,195	12.53	Meal and flour of wheat or of meslin	5,464,601	10.80
3	Meal and flour of wheat or of meslin	1,295,213	8.23	Ships and boats, other than warships	4,170,354	8.24
4	Flour & flakes of potatoes,fruits,vegetables	874,388	5.55	Vegetable products,chiefly for human food nes	3,481,811	6.88
5	Edible nuts,fresh or dried	555,258	3.53	Rice,glazed or polished,not further prepared	3,224,260	6.37
6	Coconut copra oil	419,815	2.67	Rice in the husk or not,not further prepared	1,353,086	2.67
7	Spices, exc. Pepper & pimento ground or not	371,359	2.36	Oth. Coated iron steel plates under 3 mm	1,303,930	2.58
8	Watches, watch movements and cases	359,096	2.28	Non alcoholic beverages,n.e.s.	1,251,974	2.47
9	Clothing of text fabric, not knitted crocheted	341,063	2.17	Food wastes & prepared animal feed	1,206,842	2.39
10	Tobacco, unmanufactured & scrap	252,439	1.60	Special purpose ships and boats	894,421	1.77
	Total Exports	15,743,036	82.11	Total Exports	50,589,504	81.85
	HHI		0.20	HHI		0.17

Source: Comtrade database

Table 2-31. Top ten export partners for St. Vincent and the Grenadines

No.	Partner	1980		Partner	2000	
		Value in US\$	Share		Value in US\$	Share
1	U.K.	7,926,237	50.35	U.K.	18,901,144	37.36
2	Trinidad	4,152,558	26.38	Trinidad	4,823,552	9.53
3	Barbados	942,876	5.99	Barbados	4,146,644	8.20
4	USA	655,400	4.16	Saint Lucia	3,940,301	7.79
5	Saint Lucia	557,408	3.54	Spain	3,375,684	6.67
6	Saint Kitts	365,965	2.32	Antigua	2,778,757	5.49
7	Dominica	331,447	2.11	Saint Kitts	2,332,210	4.61
8	Grenada	227,045	1.44	Dominica	1,768,745	3.50
9	Antigua	220,016	1.40	Jamaica	1,457,327	2.88
10	Canada	90,893	0.58	Grenada	1,415,510	2.80
	World	15,743,036	98.26	World	50,589,504	88.83

Source: Comtrade database

Table 2-32. Top ten import categories for St. Vincent and the Grenadines

No.	SITC-1 Code description	1980		SITC-1 Code description	2000	
		Value in US\$	Share		Value in US\$	Share
1	Wheat and meslin,unmilled	6,090,263	10.67	Distillate fuels	7,672,662	4.75
2	Distillate fuels	2,184,927	3.83	Poultry,incl.offals ex.liver fresh,chilled,froz	4,985,089	3.09
3	Motor spirit, gasolene and other light oils	1,629,246	2.85	Rice in the husk or not,not further prepared	4,846,715	3.00
4	Lumber, sawn, planed, etc. Conifer	1,511,434	2.65	Wheat and meslin,unmilled	4,683,411	2.90
5	Raw sugar,beet & cane	1,305,713	2.29	Motor spirit, gasolene and other light oils	4,597,485	2.85
6	Poultry,incl.offals ex.liver fresh,chilled,froz	1,270,482	2.23	Passenger motor cars, other than buses	4,558,422	2.82
7	Paper and paperboard in rolls or sheets nes	1,208,170	2.12	Telecommunications equipment nes	4,249,998	2.63
8	Passenger motor cars, other than buses	1,181,912	2.07	Cement	3,927,421	2.43
9	Distilled alcoholic beverages	1,085,451	1.90	Food preparations,nes	3,850,877	2.38
10	Nitrogenous fertilizers and materials nes	1,076,482	1.89	Articles of artif.plastic materials,n.e.s.	3,547,544	2.20
	Total Imports	57,098,796	32.48	Total Imports	161,571,872	29.04
	HHI		0.02	HHI		0.01

Source: Comtrade database

Table 2-33. Top ten import partners for St. Vincent and the Grenadines

No.	Partner	1980		Partner	2000	
		Value in US\$	Share		Value in US\$	Share
1	USA	15,071,727	26.40	USA	61,675,612	38.17
2	U.K.	10,476,007	18.35	Trinidad	34,117,848	21.12
3	Trinidad	8,755,139	15.33	U.K.	13,825,765	8.56
4	Canada	4,446,771	7.79	Barbados	7,251,996	4.49
5	Barbados	2,993,189	5.24	Japan	5,953,051	3.68
6	Guyana	2,042,204	3.58	Canada	4,708,675	2.91
7	Japan	1,871,260	3.28	Guyana	3,644,585	2.26
8	Saint Lucia	1,119,457	1.96	France	2,932,641	1.82
9	Dominican Republic	1,082,389	1.90	Italy	2,835,933	1.76
10	Germany	1,013,066	1.77	Netherlands	1,957,188	1.21
	World	57,098,796	85.59	World	161,571,872	85.97

Source: Comtrade database

CHAPTER 3 TRADE LIBERALIZATION AND EMPIRICAL METHODS FOR THE ANALYSIS OF TRADE POLICY

The issue of trade liberalization and its consequent impacts has been the subject of extensive study leading to a large body of theoretical and empirical research. Trade theory suggests that benefits accrue from trade liberalization. Trade policy and trade orientation have a variety of economic effects that are prominent in determining economic outcomes. Economies of scale and terms of trade effects are likely as result of larger markets and changes in relative import and export prices. Dynamic effects derived from capital inflows, technology transfers and increased competition can also be expected. However, the most prominent and most often quantified are trade and fiscal revenue effects.

A significant amount of research on trade liberalization has focused on developing countries, particularly as related to economic growth and development. In this context, trade policy orientation has been the center of a rather acrimonious debate between those who favor trade liberalization and those who favor protectionism. Alternative policies implemented and the consequent results have provided ample material for theoretical and empirical study. Following, a brief discussion of influential literature on trade liberalization as related to economic performance is presented. Subsequently the theoretical framework for the analysis of economic integration agreements and the consequent trade effects is offered. Finally, a discussion on the literature related to trade liberalization and fiscal effects is provided.

Trade Liberalization and Economic Performance

During the past century policies favoring protectionism, as well as those favoring liberalization, have been implemented throughout the developing world.⁹ A prominent

⁹ Excellent reviews on this material are provided by Edwards (1993, 1997), Santos-Paulino (2005), Baldwin (2000), Winters (2004) Krueger (1997, 2003). This section draws from these reviews.

protectionist policy has been the model of import substitution industrialization (ISI). Although popular as policy throughout the fifties and sixties, it fizzled during the eighties. Import substitution industrialization was regarded as a very persuasive and coherent policy position at the time of its implementation. However, mounting evidence seemed to indicate that the premises on which ISI was built were incorrect (Winters 2000).

Part of the evidence that questioned the wisdom of protectionism and ISI was gathered during the seventies, as economists and policymakers alike were noticing that less protectionist outward-oriented trade policies generated higher rates of economic growth. Empirical research aimed at evaluating these dissimilar paradigms started to question not only the performance of import substitution relative to outward orientation, but also its unquestioned policy adoption. In fact, it was suggested that in embracing ISI, economists abandoned fundamental economic premises such as the principle of comparative advantage. This was done on the basis of questionable premises and stylized facts characterized as “touristic impressions” and “half-truths” (Krueger 1997). Baldwin (2000) added that protectionist economic thinking was distorted by the acceptance, free from criticism, of the infant industry argument and the failure to consider macroeconomic effects of the application of protective policies across all manufacturing.

The early work on the supremacy of outward orientation and trade liberalization relative to ISI was conducted by Little, Scitovsky and Scott. (1970), Balassa (1971), Krueger (1978), and Bhagwati (1978). These and other studies on the subject have been extensively reviewed, their results questioned, and weaknesses revealed.¹⁰ Despite the criticism leveled at these works,

¹⁰ Edwards (1993) cites and reviews these classic works and notes that these further led to an extensive literature.

Edwards (1997) noted they were decisive in altering thinking on trade and development among scholars, researchers and policymakers, and also in shaping policy at multilateral institutions.

While early empirical studies related to the role of exports and growth, more recent studies on trade policy and economic performance have searched for alternative measures of openness and their relationship to economic outcomes. Several cross-country econometric studies became influential works in the field (Dollar 1992; Sachs and Warner 1995; Harrison 1996; Edwards 1998; Frankel and Romer 1999). Results generally suggested a positive relationship between trade policies that encouraged openness and measures of economic performance.

Rodriguez and Rodrik (2001), in a critical review of the noted work challenged the validity of the evidence presented. They observed that, “if there is an inverse relationship between trade barriers and economic growth, it is not one that immediately stands out in the data” (Rodriguez and Rodrik 2001, p. 262). In building their critique they tested the validity and robustness of the studies’ results. They used the original data sets to replicate and analyze the measures of openness used, disaggregated these into tariff and non-tariff components to test statistical significance, extended and modified the empirical models to obtain additional results. They observed that under alternative specifications, conclusions about the trade and growth relationship were not as strong as suggested by the original studies.

In addition, it was noted these studies were unable to provide a persuasive theoretical framework linking trade orientation to growth. Winters (2004) suggested that a major shortcoming of the case studies was that results obtained could not be confidently generalized. Bhagwati and Srivanasan (1999) further added that the major issues making cross-country econometric studies unreliable related to poor data, inappropriate methodology and a weak theoretical framework lacking the ability to establish clear relationships between variables.

Hallak and Levinsohn (2004) imply that the issues of data unreliability, weak theory, and methodological problems went further than posing technical difficulties and they suggest these elements actually drove the results.

Additional research has focused on the role institutions have in fostering, embracing and successfully adopting trade liberalization. Institutions, defined by North (1990) as “rules of the game” or “humanly devised constraints that shape human interaction,” have a significant economic role. The evolution of diverse institutions and the quality of such institutions can be traced to factors as diverse as colonial heritage and legal origins. These elements, as well as the basic “rule of the game,” can be useful in explaining cross-country differences in economic performance (Acemoglu, Johnson and Robinson. 2004).

The relationship between institutions, trade, and growth was also investigated by Dollar and Kraay (2002). The objective of their work was to examine the relative importance of both trade and institutions in explaining cross-country variation in growth. They concluded that both have an impact on growth in the long run, but trade might have a slightly larger role in the short-run. In this sense, the process of trade liberalization can be perceived as influential in encouraging domestic economic policy reforms that generate positive spillovers and foster solid institutions. Hence, the interaction between trade liberalization and other reforms have led to literature that explored additional venues through which trade liberalization affects domestic economic performance.

This literature has viewed trade liberalization as a precondition, a complement and promoter of successful general reforms. Trade imposes rigorous competition on domestic producers enhancing competitiveness, fosters foreign direct investment, alters the political economy by reducing rent seeking behavior, constrains government’s ability to manipulate

macroeconomic policies and subjects and binds economic actors to the discipline of international markets and the international environment (Sachs and Warner 1995). Furthermore, openness generates feedback channels to evaluate the performance and effects of policies (Berg and Krueger 2003). The literature suggests that these elements promote the development of more stable rules of the game, effectively fostering institutional development.

The relationship between trade policy and economic performance has generated a large body of scholarly literature that has failed to yield conclusive and unambiguous results. However, critics of the recent work on this area acknowledged that they “know of no credible evidence—at least for the post-1945 period— that suggest that trade restrictions are systematically associated with higher growth rates” (Rodriguez and Rodrik 2001, p. 317). An interpretation of the absence of such evidence makes the inconclusiveness perhaps innocuous and supports the notion that protectionism does not lead to positive outcomes.

The Theory of Preferential Trade Agreements

The process of trade liberalization at a multilateral level has proven to be lengthy and difficult. Often the challenges posed by multilateralism have been avoided by the formation of smaller economic integration agreements. In the recent past the regionalization of trade has taken place in two stages. These were termed the old regionalism of the fifties and the new regionalism of the nineties by Bhagwati and Panagariya (1996). The first stage was a reaction to the international economic order that emerged in the post WWII era and pursued a multilateral trade system. Multilateralism was undertaken under the direction of the General Agreement on Trade and Tariffs (GATT), later transformed into the World Trade Organization (WTO). It soon became clear that achieving multilateral free trade was not simple. Hence, alternative trade liberalization approaches were pursued either unilaterally or through the formation of regional trade agreements (RTAs).

The WTO/GATT has, since 1958, registered 211 RTA notifications. While 27 RTAs were notified and registered between 1958 and 1989, 184 notifications were made between 1990 and September 2006. In fact, it was noted that by 1997 42% of trade took place within the confines of preferential trade agreements (Grether and Olarreaga 1998). The proliferation of these agreements revived the theoretical study of RTAs as well as associated empirical work. Theoretical work on RTAs was introduced by Viner (1950), Meade (1955), Lipsey (1957, 1960), Johnson (1960) and others. Much of the empirical work that followed attempted to estimate the trade effects generated by RTAs.

The new regionalism renewed attention to the theoretical and empirical aspects of economic integration. Advocates of multilateralism and those favoring regionalism have debated the question of whether or not RTAs constituted means for enhanced world welfare. Some have questioned whether they are simply protectionist tools or are gradual steps toward comprehensive trade liberalization (Krueger 1999). Bhagwati and Panagariya (1996) have framed this debate as one where RTAs are viewed as either “stumbling blocks” or “building blocks” for trade liberalization.

The growing number of RTAs also renewed interest in the measurement of trade effects on member and non-member countries. Much of the empirical work has followed the theoretical framework laid out by Viner and others and concentrated on the measurement of trade creation and trade diversion effects. Computable general equilibrium (CGE) and partial equilibrium (PE) models in the case of ex-ante analysis and the gravity model, in the case of ex-post analysis have been utilized for the empirical analysis of customs unions and trade policy in general.

The analysis of RTAs and the formation of customs unions owes to the theoretical contributions made by Viner (1950). The ideas advanced by his work initiated a rich literature

and continue to be influential almost sixty years later. Viner's significant contribution to the theory of customs unions (CU), or other forms of integration, was his observation that ambiguous welfare effects could be expected from economic integration.

At the core of the theoretical framework introduced by Viner were the concepts of trade creation and trade diversion. These concepts were the basis for the quantification and analysis of welfare effects likely to result as the outcome of economic integration. "If the customs union is a movement in the direction of free trade, it must be predominantly a movement in the direction of goods being supplied from lower money-cost sources than before. If the customs union has the effect of diverting purchases to higher money-cost sources, it is then a device for making tariff protection more effective" (Viner 1950, p. 42). Hence, trade creation refers to the change, as consequence of the formation of the union, from consumption of more costly domestic products to less costly products from a partner country.

Trade creation consists of two effects.¹¹ First, a production effect reflecting savings from the reduction of domestically produced goods and second, a consumption effect reflecting the gains in consumer surplus as high cost consumption goods were substituted for lower cost goods. In similar fashion, trade diversion refers to a change in the source of imported goods from a non-union low cost producer to a higher cost union partner. The two effects are an increase in the cost of previously imported goods as consequence of the shift in suppliers as well a consumer surplus loss from the substitution of high cost goods from a partner country, for low cost goods from a non-member country (Robson 1980).

The Vinerian framework and subsequent theoretical refinements provided the stage for the analysis of trade and welfare effects rising from the formation of preferential agreements. The

¹¹ Although Viner described production effects subsequent refinements of the definitions included consumption effects. These definitions were extracted from Robson (1980).

outcome of the formation of a union is thus evaluated empirically by estimating the relative sizes of trade creation and trade diversion. If trade creation exceeds trade diversion a union is considered to be advantageous and welfare enhancing.

The theoretical framework developed allows for the evaluation of trade flows and production and consumption effects in a three-country setting. Economic integration would have foreseeable impacts on the allocation of resources, economies of scale, terms of trade, factor productivity, economic growth and stability, and the distribution of income (Robson 1980). However, the comparative static analysis is based on a series of restrictive assumptions¹² shared with trade theory that facilitate the analysis of resource allocation, welfare and the trends in specialization. The assumptions are

- Perfectly elastic supply for imports
- Perfect competition for factor and product markets
- Factor mobility within countries but not among countries
- Zero transportation costs
- Tariffs as the only available policy tool
- Prices accurately reflect opportunity costs
- Balanced trade
- Full employment of resources

Although Viner was aware that economies of scale, imperfect competition, and terms of trade issues would arise, he left them unattended. Subsequent literature dealt with these and other topics more formally. Meade (1955)¹³ was credited with having provided the first theoretical analysis of customs unions using a general equilibrium model. Meade included a critique and extension of Viner's model, which he interpreted as one with infinite supply

¹² This list of assumptions was summarized and provided by Robson (1980) and drawn from that source.

¹³ This brief discussion draws on the careful review of Meade (1955) provided by Panagariya (1997).

elasticities and demand elasticities of zero.¹⁴ The model allowed many commodities produced in all countries.

A major contribution of the analysis was its focus on world welfare and the likely changes that could occur upon the formation of preferential trading arrangements (Panagariya 1997). Meade's work provided a general static framework of analysis for integration agreements that admitted substitution of goods both in demand and supply and allowed for simultaneous adjustments in related factor and goods markets in trading countries. He also admitted likely terms of trade effects on the welfare of trading countries and the rest of the world (De Rosa 1998).

Lipsey (1960) further refined the concepts of trade creation and trade diversion suggesting that the inclusion of consumption effects would invalidate Viner's characterization of assigning a positive connotation to trade creation and a negative implication to trade diversion. He argued that it is possible to increase welfare despite having trade diversion.

The insights provided by Viner and others on the formation of customs unions led to questioning the rationale for their formation. The second-best option they represented led to the theory of second-best. From this perspective, Johnson (1960) suggested that customs unions were formed in response to political rather than economic motivations. Furthermore, he advocated that the measurement of trade creation and trade diversion should include production and consumption effects as changes in import demands were a consequence of the formation of a customs union and the tariff reduction or elimination.

Cooper and Massell (1965a) argued that custom unions' welfare effects had to account for a tariff reduction component and a pure trade diversion component. The tariff reduction

¹⁴ Panagariya (1997), as well as Pomfret (1988), include footnotes where they call attention to the dispute surrounding the interpretation of what Viner really meant regarding this issue.

component impinged directly on consumer surplus gains. If it were larger than the pure trade diversion component, the formation of a customs union would be beneficial. However, they suggested that this “result implies that a customs union is necessarily inferior to an *appropriate* policy of non- preferential protection” (Cooper and Massell 1965a, p. 746).

The formation of a customs union, as suggested by Cooper and Massell (1965a) and by Johnson (1960) responded to motivations other than the improvement of resource allocation and could not be superior to unilateral liberalization. It was clear to them that second-best policies had an inherent bias toward protection that ultimately motivated them. The general arguments made by Cooper and Massell (1965a) were extended to the case of developing countries. Cooper and Massell, (1965b) attempted to understand and to “consider how membership in a CU may enable a less developed country to achieve more economically the ends served by protection” (p. 462).

Although Viner knew that the formation of a customs union allowed for gains derived from changes in terms of trade and economies of scale, formal treatment and discussion of these issues were addressed by Mundell (1964) and Corden (1972). Mundell was aware of the considerable void in the literature regarding the issue of terms of trade and how these were likely to impact gains or losses among countries forming customs unions. Mundell addressed the changes and determination of relative prices in the three-country model when tariffs were reduced and hence their likely effects on the terms of trade.

Consistent with the previous literature that sought to refine the measures of trade creation and trade diversion, Corden (1972) analyzed whether, in the presence of economies of scale, these concepts were still valid. He suggested that the consideration of two additional effects was necessary and demonstrated the existence of cost reduction and trade suppression effects related

to scale economies. The former effect was perceived as being the more important of the two and one he argued had to be taken into consideration. Although he included further issues for consideration, trade creation and trade diversion remained relevant.

The purpose and contribution of the literature initiated by Viner, and substantially enriched by others also addressed the basic effects of customs unions. The idea that the formation of a customs union, as a form of trade liberalization, could lead to losses in world welfare was powerful. This notion and the likelihood that the results could also depend on other economic factors gave ample space for theoretical discussion and for empirical investigation. In fact, Pomfret (1988) noted that: “During the decade following Viner’s book emphasis was largely on clarifying the concepts of trade creation and trade diversion and identifying situations under which each would be more likely”(p.109). The issue of adequate measurement of these two concepts is still a work in progress with some criticizing actual methods and providing for refined methods of measurement (Dayal and Dayal 1973).

Empirical Methods in Trade Policy Analysis

The empirical analyses of RTAs and trade policy have usually dealt with the quantification of trade creation and trade diversion. The selection of appropriate methodology must consider the specific circumstances of the required analysis due to significant tradeoffs that exist when such selection is made. The three methods commonly used in empirical studies of RTAs are gravity models, computable general equilibrium (CGE) models, and partial equilibrium models.

These alternative methodologies are often characterized by the time dimension employed. Ex-ante analysis addresses the problem of estimating the likely outcome of an integration process prior to its implementation and simulates the likely outcomes of post-integration scenarios. Ex-post analysis is performed after the formation of an integration arrangement and uses historical data. The usual objective is to estimate trade flows of a hypothetical condition,

termed the anti-monde, based on the absence of a trade agreement and compare them to conditions prevalent after an RTA is formed.

Robson (1980) suggested a six-fold classification system for empirical studies where the ex-ante or ex-post distinction is combined with three methodologies. The first is the direct method, which estimates integration effects while relying on some basic analytical model whose parameters are actually estimated. The process includes the observation of tariff changes and their impact on the domestic prices of the imported goods. The evaluation of the impacts on tariffs and trade changes are carried out with the help of import demand elasticities and elasticities of substitution, whose values are derived from regression studies.

A second methodological approach to the evaluation of effects derived from integration consists of survey methods. These can be surveys of the views held by experts, by producers, or other economic actors on how they expect changes of trade structures will affect their performance on the domestic market and in the partner market. Surveys of price and cost data and their analysis are also included in this methodology.

Finally, the effects of an integration arrangement can be evaluated by indirect methods. These are primarily employed in ex-post studies and refer to the residual imputation of projected pre-integration trade flow estimates that are subtracted from actual trade flows. This comprises the construction of an appropriate anti monde.

The methodology used most often in trade policy analysis is the gravity model which best fits Robson's classification within the category of ex-post residual imputation methods. Other commonly used methodologies are partial and general equilibrium models that fit into Robson's classification scheme as ex-ante indirect methods. A significant part of the empirical literature, particularly early literature, dealt with the estimation of trade effects in Europe motivated by the

formation of the European Community (EC). Another favorite subject of empirical study has been the Generalized System of Preferences (GSP). Together these constitute the most heavily studied cases of preferential trade (Pomfret 1988).

Gravity Models

Gravity models were introduced by Tinbergen (1962)¹⁵ and have been commonly used in the empirical analysis of international trade.¹⁶ Economists have used gravity models to analyze a host of trade issues such as economic unions, free trade agreements, and the relationship between trade and growth. The model has, in most of its empirical applications, performed well and demonstrated its usefulness as a method of analysis.

The name and the basic idea behind the model derive from concepts of Newtonian physics, in particular from the “Law of Universal Gravitation.” This law suggests that the force of gravity is a positive function of mass and an inverse function of the distance between two bodies. Economists have borrowed from this concept and developed an analogous relationship for the analysis of trade flows. Bilateral flows are viewed as a positive function of the size of the countries’ economies and an inverse function of the distance between them (Head 2003).

Economic size enhances a country’s ability to engage in trade as trade flows between countries “can be explained by supply conditions in the country of origin, demand conditions in the country of destination, and by forces that may either stimulate or restrain the bilateral flow” (Nielsen 2003, p. 42). Distance captures trade costs and other burdens that might act as barriers to trade. Hence, the prediction that bilateral trade volumes will be positively related to the

¹⁵ Although Piermartini and Teh attribute this pioneering work to Tinbergen, Sandberg notes that Poyhonen (1963) was working on this type of model simultaneously.

¹⁶ This section draws on Sandberg (2003), Piermartini and Teh (2005), and Nielsen (2003) all of which provide excellent reviews.

economic size of the trading partners and negatively to distance, inclusive of other trade costs (Nielsen 2003).

In its most basic form the gravity model can be specified as:

$$T_{ij} = M_i^{\beta_1} M_j^{\beta_2} D_{ij}^{-\beta_3} \varepsilon_{ij} \quad (3-1)$$

where

T_{ij} = bilateral trade flow between country i and country j,
 M_i = economic mass interpreted as GDP of country i,
 M_j = economic mass of country j,
 D_{ij} = distance between countries i and j
 ε_{ij} = the standard error term.

It is common to employ a log transformation as estimated coefficients can be interpreted as elasticities. Taking logs of equation (3-1) results in a linear form represented by:

$$\ln T_{ij} = \beta_0 + \beta_1 \ln M_i + \beta_2 \ln M_j - \beta_3 D_{ij} + \varepsilon_{ij} \quad (3-2)$$

Population size, GDP size, or GDP per capita can all be used to represent economic mass. However, questions exist with regards to which best represents country size for purposes of determining bilateral trade flows. Countries with large populations often have large markets and diversified production structures with economies of scale. This may result in less relative trade but leads to extensive trade potential in absolute terms (Head 2003).

Economic size measured by GDP is often used in gravity models where it is suggested that productive and export capacity are positively related to GDP size. It is often the case, however, that GDP per capita is used instead and interpreted in similar manner. Using size of GDP economic mass, because larger countries trade more in absolute terms, may overstate R^2 . In addition, it must also be noted that exports and imports are already accounted as part of GDP, which might lead to problems of multicollinearity (Head 2003).

Distance is a negative function of bilateral trade and captures a series of other costs. First, distance is a proxy for transportation costs that makes trade more burdensome and costly. Second, distance implies shipping costs as well as transport time, both of which add costs and risks particularly as they relate to perishable goods. Third, there are synchronization costs that can be significant when dealing with inputs of production as sourcing inputs from locations nearby reduce these costs. Fourth, communication costs exist. Although information technology reduced costs dramatically, cost of personal contact between managers and other actors that enhance the transmission of subtle and less formal information remain. Fifth, transaction costs related to search costs are also significant. Finally, elements of “cultural distance” or cultural differences can prove burdensome and costly as traditions and rules of exchange vary (Head 2003).

The size of the economy and distance are helpful in explaining bilateral trade flows. However, there is a significant amount of variation not explained by mass and distance. Binary variables believed to either positively or negatively affect trade flows could be included in the specification of the gravity model. These variables may include whether trading countries share a common language, colonial links, a common border, whether a country is landlocked or not, or is an island, and whether a country has participation in trade agreements. Other likely relevant factors such as price level, exchange rates, indices of trade restrictiveness or measures of trade policy can be included as well (Piermartini and Teh 2005).

Gravity models have proven effective in predicting trade flows and have exhibited good explanatory power. The model has also proven to be easy to work with, as it is clear, simple and intuitive. In addition, data requirements are fairly limited and these data are usually available. However, some features of gravity models have raised questions as to the methodology. The

primary critique leveled has been that they lack a theoretical foundation based on traditional international trade theory (Nielsen 2003). Although the notion that trade between countries located in close proximity and with incomes that allow for exchange is intuitively apparent, it does not fit traditional trade models. Hence, the Ricardian model, which explains trade flows on the basis of technological differences, or the Heckscher-Olin model which bases its explanation on factor endowments, are absent in the basic specification of the gravity model (Piermartini and Teh 2005).

Various researchers have made a considerable effort in search of theoretical support for the observed trade effects given by economic size and relative costs. Anderson (1979) after considering the gravity model “the most successful empirical trade device” attempted to provide such a theoretical basis of the gravity equation with an application to commodities. To achieve this Anderson used microeconomic foundations found in the properties of expenditure systems.¹⁷ Anderson derived the gravity equation from the expenditure system and attempted to explain that where these expenditure systems were similar country size mattered. Bergstrand (1985) derived the gravity equation from a general equilibrium model and suggested “the gravity equation is a reduced form from a partial equilibrium subsystem of a general equilibrium model with nationally differentiated products” (p.475). Bergstrand (1989) extended on the previous work to include the Heckscher-Olin factor endowment theoretical framework.

Further theoretical refinements made by Anderson and Wincoop (2003) provided theoretical derivations of the gravity model that included elements of monopolistic competition. These derivations showed that bilateral trade flows depend on relative trade costs. “The key implication of the theoretical gravity equation is that trade between regions is determined by

¹⁷ Piermartini and Teh consider it the first important attempt to provide such theoretical basis for the gravity model.

relative trade barriers. Trade between two regions depends on the bilateral barrier between them relative to average trade barriers that both regions face with all their trading partners” (Anderson and Wincoop 2003, p.176). Overall, it is now generally accepted that “the gravity model can be derived from a partial general equilibrium framework or an international expenditure system and that the model has a basis in both traditional Heckscher-Ohlin trade models as well as models of increasing returns” (Sandberg 2003, p. 11).

Estimation and econometric issues have also prompted criticism of the gravity model. The proper specification of the gravity equation has been a subject of considerable debate and equation (3-2) has been considered misspecified. The proper specification, when pooling time series and cross section data, was suggested by Matyas (1997) to be

$$\ln EXP_{ijt} = \alpha_i + \gamma_j + \lambda_t + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 DIST_{ij} + \dots + u_{ijt} \quad (3-3)$$

where

- EXP_{ijt} = volume of trade or exports from country i to country j at time t
- Y_{it} = GDP in country i at time t and Y_{jt} is GDP in country j at time t
- DIST_{ij} = distance between countries i and j
- α_i = local country effect
- γ_j = target country effect
- λ_t = the time effect
- u_{ijt} = the disturbance term

Piermartini and Teh (2005) have summarized some weaknesses inherent in the methodology. First, the high explanatory value yielded by the gravity model may tempt some to add explanatory variables in a rather arbitrary fashion without strong theoretical support for such inclusion. Just as the omission of an important determinant of trade can lead to bias, inclusion of irrelevant variables can lead to misspecification. Second, studies often fail to consider relative trade costs and distance while considering only their absolute values. Third, problems arise in the study of bilateral trade when countries do not trade with each other and the observations

include a zero. This can lead to biased and inconsistent estimates if these observations are omitted. On this point, Nielsen (2003) noted that alternative techniques in non-linear estimation allow for including zero observations hence, these make use of valuable information contained in such observations. Fourth, endogeneity bias arises as institutional quality, country infrastructure and other issues affect GDP and GDP per capita.

Gravity models and RTAs: Gravity models have also been modified to allow for the estimation of trade diversion and trade creation and in assessing trade effects in economic integration agreements. To capture these effects two dummies are introduced as proxies for each effect. These generally capture the changes in the volumes of trade among countries that are members of a trade agreement. A dummy variable captures the increase in exports from member countries that result from the formation of the RTA and can be interpreted as gross trade creation. The second dummy captures trade volumes between a member country and a non-member. If there would be a decrease in exports from the non-member country as a result of the formation of an RTA then it could be interpreted as trade diversion (Cernat 2001).

Although, gravity models are specialized cases of ex-post regression analysis, ex-post analyses of regional integration have a long history. Early empirical studies addressed the case of the European Community (EC) and these types of studies have been carried out using several methodologies. Europe provided a fertile ground for such research, as it was the first union of the post war period. Balassa's work on the subject was critical in the estimation of trade creation and trade diversion although it did not specifically use gravity models (Nielsen 2003).

More recent ex-post studies employing gravity models have been carried out as the world witnessed a resurgence of RTAs. These have concentrated in evaluating and often predicting, as ex-ante analysis can also do, the effects of recent integration agreements. Prominent recent

studies in a global context are by Oguledo and MacPhee (1994), Frankel, Stein and Wei (1995), and Soloaga and Winters (2001). The first of these studies uses a gravity model derived from a linear expenditure system in an attempt to simultaneously address empirics and criticism on the weak theoretical foundations in gravity models. The model is estimated using dummies for RTAs and also included variables for preferential tariff rates for eleven major customs areas and their major trading partners, namely the US and the EU. Both noted dummies are significant.

Frankel, Stein and Wei (1995) used the gravity model to evaluate trade patterns in several trading blocs. They question whether there is increased regionalization as consequence of the formation of trade blocs. The objective was to evaluate the extent to which regionalization takes place after adjusting, with the use of the gravity equation, for the natural determinants of trade: economic mass and distance. The conclusion was that some regional blocs such as MERCOSUR and the Andean Pact trade more amongst each other yet most other blocs do not.

Soloaga and Winters (2001) considered nine RTAs to quantify trade effects. Their work presented a modified gravity equation that introduced three dummies to capture intra-bloc trade effects, the total exports of member countries, and the total imports of member countries. Analysis and comparison were performed for pre and post-bloc formation. Evidence of trade diversion was present only in two of the nine RTAs and positive effects for most all other regions. Issues unrelated to trade policy, however, were believed to drive results in the case of MERCOSUR.

Important regional studies, other than those concerned with European integration, were conducted as well. The case of NAFTA is particularly relevant. Krueger (1999) used a gravity model to analyze trade effects between the United States and Mexico yet also employed “shift-and-share” analysis. Krueger concluded that with data available at the time of her writing, the

impact of NAFTA on the United States was rather small and Mexican exports to the U.S. were relatively more prominent.

Relevant gravity modeling studies particular to the Caribbean region and its relation to Europe were conducted by Finger, Ng and Soloaga (1998); Nilsson (2002); and Sandberg et al. (2006). Finger, Ng and Soloaga (1998) used a gravity model to evaluate the impact of CARICOM, NAFTA and MERCOSUR on the countries of the Caribbean Group for Cooperation on Economic Development (CGCED), among which the countries of the OECS are included. The findings suggested effects from CARICOM were significant and increased trade among members. The impact from the formation of NAFTA has not affected exports of CGCED countries to members of NAFTA. Exports to MERCOSUR countries were negative and statistically significant.

Nilsson (2002) examines the effect the Lomé Convention and the European GSP have on developing country exports. The results suggest that the export effects of the Lomé Convention were significant and larger than the effects of GSP. Exports of beneficiary countries increased relative to non-beneficiary third countries. The analysis also includes the effects of cultural and linguistic ties and trade between former colonies and colonial powers. Historic ties are found to be significant in explaining trade between selected European countries and former colonies. Similarly, evidence of trade linkages due to colonial heritage between Caribbean countries and the UK were demonstrated by Sandberg et al. (2006).

Computable General Equilibrium Models (CGE)

Computable General Equilibrium (CGE) models are constructed on the basis of general equilibrium theory and offer a framework of analysis that is rigorous as well as theoretically

consistent.¹⁸ The workings of an economy and the changes that would follow specific policy implementation can be simulated, as CGE models act to emulate the functions of laboratory experiments. In this function, CGEs have had a significant role in ex-ante modeling of international trade (Piermartini and Teh 2005).

Although most CGE applications are static and termed first generation models, Nielsen (2003) notes that second generation models extend their analytical power to the inclusion of increasing returns and imperfect competition in relevant sectors. Third generation models can also perform dynamic analysis, inclusive of capital accumulation and technical progress effects. These possibilities have made CGE models popular for modeling sophisticated relationships and can provide policymakers with comprehensive scenarios.

CGE simulations can be used to evaluate trade policy options and in modeling trade and welfare effects of economic integration agreements. Overall aggregate trade, terms of trade effects, factor prices, trade creation and trade diversion within an economy-wide model can be estimated. Inter-sectoral linkages, estimates of prices, wages, and exchange rates that lead to equilibrium in product and factor markets, as well as balance of trade figures, can be obtained and are considered in the estimation of parameters. Hence, differences in values in the pre- and post-implementation situations allow the evaluation of alternative scenarios and gains, losses and distributional effects from policy actions can thus be identified (Nielsen 2003).

In order to carry out simulations a social accounting matrix must be constructed. The matrix should consider the links between sectors in the economy, therefore data requirements tend to be considerable. Required information would include input-output tables showing intersectoral linkages and contributions made by each production sector. Government fiscal and

¹⁸ This section draws on the excellent reviews on the subject provided by De Rosa (1998), Nielsen (2003) and Piermartini and Teh, (2005).

budget accounts, disaggregated into consumption, investment, government expenditures, balance of payments, as well as data on exports their composition, destination and origin and volumes of imports are necessary as well. Data matrices, arranged into receipts and expenditures, must be balanced and standardized (Nielsen 2003; Piermartini and Teh 2005).

Once a social accounting matrix is completed the CGE model must also include values for the exogenous or behavioral parameters. These measures characterize the behavior and the response of producers and consumers to changes in incomes and relative prices. The parameters most often needed are: elasticities of substitution related to the responsiveness of producers to changes in relative prices of factors of production; consumer demand and income elasticities; and Armington elasticities, which determine the substitutability between domestic and imported products. These elasticities are usually derived from previous econometric work and adapted into the model.

CGE models have generally proven useful in understanding complex interactions and tend to discipline thinking on the internal workings of an economy. They can provide policymakers and analysts with a means to understand how a policy works its effects through the economy from a local, regional or global perspective. Hence, CGE models can provide policymakers with a means of assessing possible policy outcomes as these provide a view on sectoral effects as input-output relationships change, prices and quantities are modified, and factor market relations are altered. This is possible because of a framework based on strong microeconomic and trade theory (Nielsen 2003).

Although highly sophisticated and complex, CGE models have some inadequacies and have drawn some criticism. Taking a general equilibrium approach and considering an economy wide model clearly make for intense data requirements. As note previously, CGE models require

a full account of trade flows, tariff rates, macroeconomic data as well as a wealth of additional government data on various variables. These data are often missing or of dubious quality thus posing some difficulties. As a result of such burdensome and problematic data requirements, researchers move toward the use of alternative methodologies (Nielsen 2003; Piermartini and Teh 2005).

Further criticism is based on CGE models relatively high degree of data aggregation that comes at the expense of even greater detail. This aggregation takes place to a point that fundamental relationships can be concealed. Complex simulation models where large amounts of data inputs produce precise outputs can be deceiving as precise sources of certain results are not clearly identifiable. In addition, when dealing with preferential trading arrangements analysts must take into account that CGE models, by virtue of generally being static, cannot adequately adjust when different phases of RTAs enter into effect (Nielsen 2003).

CGE models are also often questioned for drawing values for critical behavioral parameters from outdated econometric work. It is usually the case that the Armington, substitution and other elasticities and parameter values are chosen arbitrarily. Additional criticism deals with the existing uncertainty on the appropriateness of the technical relationships and functional forms (De Rosa 1998). From such assessment, some have suggested that systematic validation of CGE simulations through ex-post evaluation is necessary to enhance the confidence and the predictive potential of the analytical results (Piermartini and Teh 2005).

Empirical CGE studies and RTAs: The general equilibrium nature of CGE models allows for distinguishing trade creation and trade diversion by sector and provides useful information on welfare changes and effects on bilateral trade flows in alternative policy scenarios. CGE models have been used extensively to simulate not only RTAs but also global trade and multilateral

negotiations. Piermartini and Teh (2005) cite the work of Deardorff and Stern (1986) as the one of the first global CGE models, commonly referred to as the Michigan model. Another well-known and used model is the Global Trade Analysis Project (GTAP) at Purdue University. Various global simulations have addressed multilateral trade negotiations such as the Uruguay and the Doha rounds.

Kerkala, Niemi, and Vaittinen. (2000) used a multiregional general equilibrium model to examine the consequences for African ACP countries of a post-Lomé world. The analysis simulates the effects of free trade compatible with WTO requirements and compares the results with the GSP system. Simulations were carried out with the GTAP model and results suggested negative welfare effects for African countries. While trade volume increased with an FTA, it decreased with the GSP system. In both cases world welfare increased, however, positive effects were limited to the EU while they were absent in ACP countries.

Using a CGE model Wolf (2000) evaluated the effects of tariff reductions, consequence of reciprocity under WTO rules, and estimated these effects for alternative trade liberalization scenarios between the EU and the West African Economic and Monetary Union (UEMOA). The main objective of the study was to quantify the gains of trade liberalization and compare them to the losses in tariff revenue that would likely follow. Results demonstrated that the UEMOA countries would experience a significant loss in terms of tariff revenue.

Harrison et al. (2002) and Harrison et al. (2003) employed CGE models to evaluate policy scenarios for Chile and Brazil respectively. Alternative trade policy options for Chile using a CGE model included insertion in MERCOSUR, a free trade agreement with NAFTA, multilateral and unilateral liberalization. The conclusions suggested that as a result of an already liberal trade policy, overall gains for Chile would be small yet positive. Clear gains from joining

NAFTA were shown. In the case of MERCOSUR and unilateral reductions, it was recommended that Chile establish external tariffs of 6-8 percent.

The evaluation for Brazil was performed in the context of MERCOSUR and trade policy options included joining the Free Trade Agreement of the Americas (FTAA), the establishment of a EU-MERCOSUR trade agreement. In addition, estimates of pursuing multilateral liberalization were examined. Beyond the trade effects, this study spent considerable effort in evaluating trade policy effects on the poor. For this purpose rural and urban household level data were analyzed. A strategy of pursuing the FTAA, the EU-MERCOSUR agreement, and multilateral liberalization would lead to benefits. Essentially all liberalization options demonstrated that gains would accrue for Brazil. At the household level the poorest households would see a large increase in relative income.

Partial Equilibrium Models

Static partial equilibrium ex-ante models are used to predict or simulate the effects of trade policy changes when tariff rates are expected to be modified, as is the case in the formation of RTAs or other trade liberalization schemes. Partial equilibrium models used in discriminatory trade analysis have followed the pioneering work by Verdoorn (1960) and are derived from Viner's theoretical formulation. Their basic objective is to estimate trade creation and trade diversion. Verdoorn developed this methodology in order to quantify the effects of the formation of a customs union between European countries as the European Economic Community was being formed. In its original version Verdoorn used his model to quantify the trade effects of the Benelux customs union. Several variants of this model have been developed following Verdoorn's contribution.

Two basic types of partial equilibrium models used in the analysis of discriminatory trade arrangements are often discussed in the literature. The first model assumes trade in a

homogeneous commodity. Under this assumption, a reduction in tariff rates would lead to an expansion of trade flows. However, the expansion is limited by the corresponding supply elasticities. If the supply elasticities of the beneficiary country are high, export expansion would be substantial. If they would be low export expansion would be minimal (Clague 1972).

The second type of partial equilibrium models used assumes product differentiation and infinite elasticities of supply. In this type of model, and upon a tariff reduction, the factors limiting trade flows are the degree of substitutability among goods. A high elasticity of substitution leads to a substantial increase in trade flows and likewise a low elasticity of substitution to a small increase in trade flows. Models assuming product differentiation result in more modest trade effect estimates (Clague 1972).

The Verdoorn model

Measures on the impact of the formation of a preferential trade agreement are obtained through the assessment of the two static effects discussed previously, namely, trade creation and trade diversion. In developing the partial equilibrium differentiated good model, constructed by Verdoorn it was later generalized by Clague (1971), it is assumed that trade flow changes do not affect incomes or exchange rates, infinite supply elasticities are present and there are and iso-elastic import demand functions.¹⁹ The model requires knowledge of import demand elasticities and the elasticities of substitution between preferred and non-preferred imports. Hence, trade creation is expressed as

$$TC = M_P \varepsilon \left(\frac{\Delta t}{1+t} \right) \quad (3-4)$$

¹⁹ This section only contains a brief discussion of partial equilibrium models. A full discussion and derivation of the Verdoorn-Clague model is presented in chapter 4.

Where

TC= Trade Creation
M_p=Imports from preferences beneficiary
ε= Import demand elasticity
t= tariff

The relationship indicates that in an importing country the additional imports from a country that enjoys trade preferences is the product of initial imports, the elasticity of import demand and the change in tariff structure. The model is based on the assumption that the substitutability between imports from preferred sources and domestic production is equal to the substitutability of all imports and domestic production. Trade diversion is expressed as

$$TD = M_p \alpha_2 (\sigma - \varepsilon) \left(\frac{\Delta t}{1 + t} \right) \quad (3-5)$$

Where

TD= Trade Diversion
M_p=Imports from preferences beneficiary
α₂=Share of imports from non-preference beneficiary
σ=Elasticity of substitution
ε= Import demand elasticity
t= tariff

The Verdoorn model assumes that total imports (M₁+M₂) are equally substituted for domestic production hence, the cross-price elasticity for preferred and non-preferred imports is determined by the share of non-preferred imports times the difference between the elasticity of substitution between imports and the import demand elasticity, namely α₂ (σ - ε).

The Baldwin-Murray model

Baldwin and Murray (1977) provided a variation of Verdoorn's methodology that has also been used often in partial equilibrium analysis. Trade creation is identical in both methods yet trade diversion differs. The Baldwin-Murray method requires knowledge of import demand

elasticities and data not only on imports from non-preferred sources, but for domestic production as well.

The Baldwin-Murray model avoided the use of elasticities of substitution and interpreted trade diversion as trade creation weighted by the ratio of imports from non-preferred countries and domestic production of a good. Hence, Baldwin and Murray assumed that the substitutability between imports from a preferred source and imports from a non-preferred source was equal to the substitutability between imports from a preferred source and domestic production. (Sawyer and Sprinkle 1989).

Trade Diversion in the Baldwin-Murray is expressed as

$$TD = M_P \varepsilon \left(\frac{\Delta t}{1+t} \right) \left(\frac{M_N}{M_D} \right) \quad (3-6)$$

Where

TD= Trade Diversion

M_P =Imports from Preferences Beneficiary

M_N =Imports form Non-Preferred country

M_D =Domestic Production

ε = Import Demand Elasticity

t = Tariff

The differences between the Verdoorn and the Baldwin-Murray model are due to assumptions made on the substitutability between imports from preference beneficiaries, non-beneficiary imports and domestic production. These differences originate in the different views of consumer behavior that they represent. In the Baldwin-Murray model a change in the price of imports from a preferred country, due to a decline in tariffs, leads to a substitution effect between preferred imports and non-preferred imports and a substitution effect between preferred imports and domestic production separately. In the Verdoorn model a change in the price of imports from a preferred country, due to a decline in tariffs, leads to a substitution effect between

preferred and non-preferred imports and a joint substitution effect between all imports from both sources and domestic production (Sawyer and Sprinkle 1989).

Partial equilibrium models have been subject to criticism due to their limitations. This issue of the choice of elasticities is at the core of criticism leveled at partial equilibrium trade models. The values for the elasticities used are chosen arbitrarily on the basis estimates often considered unreliable. Nielsen summarizes this situation stating “this richness in detail cannot be followed through to the parameters of the models, such as the elasticities because estimates are simply not available at that level of detail” (Nielsen 2003, p. 62).

A further weakness attributed to partial equilibrium models is their inability to consider economy wide changes brought about as consequence of tariff changes. Intersectoral linkages and factor markets are ignored and assumed to be unaffected. Clearly the models are limited in that they only consider those markets in which policy or tariff changes take place.

Despite these basic limitations, partial equilibrium models have some distinct advantages. They allow for estimates to be performed at highly disaggregated levels, therefore allowing for detailed analysis even by tariff line. In fact, such minute level of detail allows for precision in identifying specific products and trading partners that are affected by alternative trade policy conditions (Laird and Yeats 1986).

Partial equilibrium models and RTAs: Empirical studies on trade integration using partial equilibrium models are numerous and cover various agreements. The early empirical studies including Verdoorn’s original contribution addressed European integration and demonstrated that although modest, there were gains to such union.

The Baldwin and Murray (1977) application of partial equilibrium simulations estimated and compared developing country’s trade benefits from preferential trade under GSP and

multilateral MFN reductions. Baldwin and Murray simulated the effects of alternative scenarios where GSP of the U.S., the E.E.C. and Japan were considered. Estimates were made in the absence of MFN tariff reductions and in the presence of a 50% MFN reduction. The conclusions suggested that GSP benefits are outweighed by MFN liberalization. Pomfret (1986), however, argued that the estimates and methodology introduced by Baldwin and Murray underestimated trade diversion and generate doubtful conclusions.

Following Baldwin and Murray's analysis, Karsteny and Laird (1986) employed a variation of the basic partial equilibrium model to evaluate the effects of twelve GSP schemes. The benefits of preference to beneficiaries and their effects on donor and other trading partners were also evaluated. Furthermore, industry specific effects of the GSP and MFN options were considered, thus allowing for identifying industries benefiting most as well as the major country beneficiaries. The conclusions of this study suggested that donor's imports from GSP beneficiaries were two percent higher than would have been the case in the absence of the preferences. The overall conclusions reached were that, although GSP was globally welfare improving, it was less so than MFN liberalization.

MacPhee and Oguledo (1991) addressed the issue preferences by reviewing some prior studies and questioning why different studies have considerably different quantitative results. They used a variant of the Verdoorn-Clague model to estimate ex-post rather than ex-ante the trade benefits granted by the GSP scheme in the U.S. They employed the changes from market growth and improved competitiveness and subtracted them from total growth. The residual was attributed to GSP and with this method the need of for elasticities was absent. Results suggested that imports from beneficiary countries grew faster than from non-beneficiaries.

Dealing within a North American context, Karemera and Koo (1994) employed a partial equilibrium framework to study trade effects in the context of the U.S.- Canadian free trade agreement. Drawing on quarterly trade data from 1970-1987, estimates were performed at commodity or industry level. Results indicated that significant increases in trade volumes would be present for both countries. Beyond analyzing trade effects for the two trading countries, Wainio and Gibson (2003) employed a model with infinite elasticity of supply and used 8 digit level U.S. import data to evaluate the significance of US non-reciprocal trade preferences for developing countries. Estimates on the proportion of imports at preferential rates versus MFN tariffs were performed as well as simulations for different tariff cuts and MFN rates. Results indicated that under MFN tariff liberalization, US imports from non-reciprocal preference beneficiaries would have a relatively small impact and increase by 3.1%. Countries highly dependent on preferences would be affected negatively by MFN liberalization while countries less dependent would increase exports to the US.

Sawyer (1984) used the Baldwin-Murray model to address the issue of trade effects as consequence of the enlargement of an existing customs union, the admission of Greece, Spain and Portugal into the EC. The main objectives were to quantify the effects of the exclusion of U.S. products from the newly admitted countries. Specific U.S. products subject to likely trade diversion due to the EC enlargement were identified. Results suggested modest losses yet most of these were concentrated in ten product categories.

Busse and Koopman (2001), Busse and Shams (2003), and Busse, Borrmann, and Grossman (2004) used the Verdoorn model to evaluate trade effects in the formation of alternative trading arrangements. Busse and Koopman (2001) addressed the possible effects of a free trade agreement between Mexico and the EU and estimated trade effects using 3 digit-level

SITC trade data. In addition, they surveyed which countries and commodities would be most affected by the FTA. Results indicated that total trade effects were positive with EU gains much larger than those of Mexico and concentrated on a reduced range of products. In the case of trade diversion the US would be most affected by a Mexico-EU free trade area.

Following a similar pattern Busse and Shams (2003) analyzed the trade effects and identified the commodities most affected from the formation of a customs union, the East African Community (EAC). Trade and tariff data for the three countries were used at the two-digit level. In similar fashion, yet in more detail Busse, Borrmann, and Grossman (2004) analyzed the likely trade and revenue impacts from the formation of an Economic Partnership Agreements between the Economic Community of West African States (ECOWAS) and the EU. Trade effects were estimated at the four-digit level using elasticities drawn from the literature. At this level of aggregation elasticity estimates were unavailable and allowance for elasticity three scenarios were made. Results indicated total trade effects for all West African countries to be positive.

Greenway and Milner (2003) also addressed the formation of EPA's within the context of countries of CARICOM. They used a variant of the Verdoorn model to evaluate reciprocal preferences granted among customs unions. Data at the two-digit level was employed to estimate trade and welfare effects of an EPA with the EU. These results were compared to one situation where extended reciprocity is granted to both the US and the EU and one with full multilateral liberalization. Trade and welfare effects on the formation of the EPA with the EU are not welfare improving yet the two alternative policy options, with full multilateral liberalization being the best, are welfare improving.

Fiscal Impacts of Trade Liberalization

Tariffs in small underdeveloped countries often are a major, if not the most important, instrument to obtain revenues given that tax collection within national borders is difficult and costly. Hence, developing countries often fear trade liberalization for its impact on domestic industries and government revenue. Trade liberalization thus raises concerns that the elimination of tariffs might lead to severe fiscal impacts. It is feared that the loss of revenue could hamper the ability of small countries to grow and develop and concerns exist that the elimination of tariff barriers would lead severe short-run adjustment costs. These would include, in addition to the losses in government revenue, increased unemployment, reduction in national output, elimination of certain domestic industries and possible macroeconomic instability. A recent survey study, however, concluded that relative to the gains brought about by trade liberalization, these adjustment costs are small (Matusz and Tarr 1999).

Furthermore, significant efforts have been expended at organizations such as the International Monetary Fund (IMF), the United Nations Economic Commission for Latin America and the Caribbean (ECLAC), and the Inter-American Development Bank (IADB), to have a more comprehensive understanding of the fiscal aspects of trade liberalization. Discussions on topics within this literature are broadly organized around two general themes. The first deals with the evaluation of the relative importance of tariff revenues as a source of total government revenue and their quantification. The second theme deals with fiscal reforms and alternative tax systems that could offset tariff revenue losses.

Reports by the IADB (2004), work by Baunsgaard and Keen (2005) and Ebrill, Stotsky and Gropp (1999), Greenaway and Milner (1991) have demonstrated that the relative importance of trade tax revenue has been decreasing for the last two decades. In general, and despite the trend, tariff revenue represents one quarter to one third of total tax revenues collected for many

developing countries. Trade taxes as a share of total government revenues among low and middle-income countries remains high.

The impact of trade policy actions, such as reduction in tariffs can have varied consequences. The IADB (2004) classifies effects of such policy actions into five categories. First, direct effects or losses due to the reduction of a given tariff line. Second, indirect effects or revenue decline from taxes imposed on CIF plus tariffs that are forgone due to the tariff rate decline. Third, elasticity effects which affect the revenues depending on whether they cause an increase or decrease in the volume of trade of certain products. Fourth, substitution effects which result in trade diversion from the displacement of imports from partners not facing tariffs. Finally, induced effects that are changes in total tax revenues resultant from consumption and production patterns borne of economic structures post liberalization.

Ebrill, Stotsky and Gropp (1999) focused on the theme of how trade liberalization affects trade tax revenues. Initial conditions such as tariff structures and domestic tax reforms are viewed as major factors affecting trade tax revenues as liberalization proceeds. Initially, liberalization does not necessarily lead to lost revenue. However, at later stages it might lead to lost revenues. The likely outcomes depend on initial restrictiveness to trade, reforms to quantitative restrictions, and reduction in the number of tariff levels. Escaith and Inoue (2001) included the importance of exchange rates and exchange rate regimes as important additional variables in the determination of trade policy effects on trade tax revenues. The net impact of policy changes could therefore actually lead to increases in revenue, depending on the strategies employed in policy implementation.

The work by Ebrill, Stotsky and Gropp reviewed revenue trends in six countries to evaluate the consequences of liberalization. From this analysis it was concluded that a series of

factors determine trade tax revenues. These are the nature and degree of tariff liberalization, existence of non-tariff barriers, changes in the exchange rate and the regime governing it. In addition, structural characteristics such as the level of development, tax and customs administrative capacity, macroeconomic environment, and domestic taxation systems, all have effects. Policy implications of the analysis indicate that further liberalization is possible without compromising revenues as the gains from trade could lead to increased revenue. However, it was suggested that for the liberalization processes to avoid negative effects, domestic tax reforms must follow.

The question of offsetting tariff revenues has been another area of significant empirical research. There are several studies that have addressed the issue from slightly different perspectives. Khattry and Rao (2002) evaluated the effects of trade liberalization on tax revenues and considered the question of whether trade tax revenue losses are somehow recovered. In pursuing this objective they explored the relationship between the established trade tax rates and the revenues obtained, as well as the changes in tax structure when levels of country development vary. They argued that structural limitations characterizing low-income countries make the gradual substitution of trade taxes by domestic sources of revenue very difficult. Their estimations are based on panel data on 80 countries for the time period 1970-98 and results are drawn for low-income, lower-middle income, upper-middle income countries. Results confirmed that an inverse relation between level of development and dependence of tariff revenue exists. In addition, findings indicated that reductions in protection levels reduce total tax revenue as well as trade tax revenue. Also the degree of urbanization had a positive influence on the tax revenue/ GDP ratio and is negatively related to trade taxes. The size of the economy had

a positive relation with trade tax revenues and the total tax revenue/GDP ratio. Furthermore results noted that as domestic taxes increased trade taxes decreased.

However, Khattry and Rao also noted that structural factors such as; whether a country is rural, contains large subsistence sectors, depends on primary commodity exports, actually influence the trade/GDP ratio and the total tax revenue/GDP ratio. These explained variations for low-income countries but not for the higher income ones. The implications drawn by the authors suggested that low-income countries have little potential to offset trade taxes with domestic tax sources.

Baunsgaard and Keen (2005) also addressed the question of whether governments were able to offset trade taxes with alternative domestic sources. They consider the issue by asking how much alternative sources provide for every dollar of tariff revenue lost. The empirical work examines the relationship between total tariff revenues and total domestic tax revenues. Panel data for 125 countries over the period from 1975-2000 were used for estimation. Results showed that higher income countries were able to substitute tariff revenues with domestic tax sources and recovery was higher for countries with a value added tax. This is noted to reflect the lesser consideration given to revenue in the design of policy, which in the case of high-income countries is implemented for protection rather than for revenue. Middle-income countries were noted to have been able to recover between 45 and 65 cents for every tariff dollar lost. On the other hand, low-income countries were unsuccessful in offsetting tariff reduction. They received, on average, 30 cents revenue from alternative domestic sources for every tariff revenue dollar lost. These findings concur with the general experience in low-income countries of an inability to replace trade taxes (IMF 2005). In the case of the OECS Stotsky, Suss and Tokarick (2000) suggested that it is imperative for Caribbean countries to embrace tax reform. Given the

general results and experiences with trade liberalization and trade reform it is understandable that governments in smaller countries would prefer a more deliberate movement, if any, to further trade liberalization.

CHAPTER 4 TRADE AND TARIFF REVENUE EFFECTS OF ALTERNATIVE TRADE SCENARIOS

Simulations designed to assess the likely impact and potential effects of alternative trade scenarios can assist in the evaluation of several trade policy options. Alternative policy scenarios can be broadly seen as encompassing regional or multilateral liberalization options. These evaluations provide insights to questions such as: what are the advantages of an EPA with EU? What are the potential gains of further and more comprehensive regional liberalization? What are the potential gains of joining the FTAA?

This section develops the partial equilibrium empirical model employed in the analysis. Simulation results of alternative trade scenarios using the Harmonized Commodity Coding System (HS) eight-digit level trade data follow the presentation of the empirical model. A discussion of trade effects and fiscal impacts, as well as of products most affected by alternative liberalization schemes, is presented subsequently.

The Empirical Model

The empirical model applied in this analysis is based on a partial equilibrium model developed by Verdoorn and initially introduced in chapter 3. The model is employed to estimate trade flows and tariff revenue changes contingent on the specification of alternative trade policy scenarios.²⁰ The Verdoorn model uses the Armington assumption of product differentiation, hence it assumes that the source of imports for any given product induce imperfect substitution. The model also makes additional assumptions: trade flow changes do not affect incomes or exchange rates, infinite supply elasticities, and iso-elastic import demand functions. These assumptions, although restrictive, are not unreasonable for the case of small countries.

²⁰ This section draws from Busse, Borrmann, and Grossmann. (2004). The model is presented in a way similar to these authors' presentation. However, nomenclature here has been modified.

The analysis of trade effects and the estimation of trade creation and trade diversion are driven by the specification of consumer behavior. One might consider, in this specification, the behavior relative to some category of goods (M). The utility function the consumer is assumed to maximize is given by

$$U=f[f_P(M_P, M_N), M_D] \quad (4-1)$$

Where

f_P = is a homogeneous separable branch of the utility function
 M_P = Imports of M from a preference beneficiary
 M_N = Imports of M from a non-preference beneficiary
 M_D = Domestic production of the product category M

The assumption of homogeneity in the f_P branch of the utility function was implied by Verdoorn (1960) and formalized by Clague (1971). This critical assumption implies that the total imports (M_P+M_N) are substituted equally for domestic production. More formally, the utility function is assumed to be separable and the implication of separable utility is that the Verdoorn model differentiates between the sources of the imports. These can be categorized as originating in a preference beneficiary or non-beneficiary country henceforth, labeled preferred (P) and non-preferred (N).

The model has two additional crucial assumptions. First, the demand function for the preference donor, which in this case refers to OECS members, for any particular good takes the form

$$M_P + M_N = \beta P_P^{\varepsilon\alpha_P} P_N^{\varepsilon\alpha_N} \quad (4-2)$$

Where

P_P =Price of imports of M from preference beneficiary
 P_N = Price of imports of M from non-preference beneficiary
 ε =Elasticity of import demand

$$\alpha_P = \frac{M_P}{M_P + M_N} = \text{Share coefficient of preferred imports}$$

$$\alpha_N = \frac{M_N}{M_P + M_N} = \text{Share coefficient of non-preferred imports}$$

$$\alpha_P + \alpha_N = 1$$

The second crucial assumption in the model defines the elasticity of substitution (σ) of preferred and non-preferred imports as

$$\frac{M_P}{M_N} = \gamma \left(\frac{P_P}{P_N} \right)^\sigma \quad (4-3)$$

The elimination of a tariff (t) on the basis of preferences only reduces prices for preferred imports P_P . In this case we know P_N does not change therefore $\Delta P_N = 0$. When differentiating (Eq. 4-3) and dividing by (Eq. 4-3) we obtain

$$\frac{\Delta \left(\frac{M_P}{M_N} \right)}{\frac{M_P}{M_N}} = \frac{\Delta M_P}{M_P} - \frac{\Delta M_N}{M_N} = \sigma \frac{\Delta P_P}{P_P} \quad (4-4)$$

Next, by differentiating (Eq. 4-2) and dividing we obtain

$$\frac{\Delta M_P + \Delta M_N}{M_P + M_N} = \varepsilon \alpha_P \frac{\Delta P_P}{P_P} + \varepsilon (\log P_P - \log P_N) \Delta \alpha_P \quad (4-5)$$

By using α_P and α_N as defined following (Eq. 4-2) we get

$$\alpha_P \frac{\Delta M_P}{M_P} + (1 - \alpha_P) \frac{\Delta M_N}{M_N} = \varepsilon \alpha_P \frac{\Delta P_P}{P_P} + \varepsilon \log P \Delta \alpha_P \quad (4-6)$$

Taking (Eq. 4-6) and rearranging using (Eq. 4-4), the derivative of α_P may be expressed as

$$\Delta \alpha_P = \alpha_P (1 - \alpha_P) \sigma \frac{\Delta P_P}{P_P} \quad (4-7)$$

Following, $\frac{\Delta M_N}{M_N}$ is eliminated from (4-4) when multiplying with $(1 - \alpha_P)$ rearranging we get

$$\frac{\Delta M_P}{M_P}(1 - \alpha_P) - \frac{\Delta M_N}{M_N}(1 - \alpha_P) = \sigma \frac{\Delta P_P}{P_P}(1 - \alpha_P) \quad (4-8)$$

$$\frac{\Delta M_N}{M_N}(1 - \alpha_P) = \left(\frac{\Delta M_P}{M_P} - \sigma \frac{\Delta P_P}{P_P} \right) (1 - \alpha_P) \quad (4-9)$$

When inserting (Eq. 4-9) to (Eq. 4-6) and substituting $\Delta \alpha_P$ by using (Eq. 4-7) we obtain

$$\frac{\Delta M_P}{M_P} = \left[\sigma(1 - \alpha_P) + \varepsilon \alpha_P + \log P_P \alpha_P (1 - \alpha_P) \sigma \right] \frac{\Delta P_P}{1 + P_P} \quad (4-10)$$

If $P_1 \approx P_2$ and $\log P \approx 0$ (Eq. 4-10) can be expressed as

$$\frac{\Delta M_P}{M_P} = \left(\sigma(1 - \alpha_P) + \varepsilon \alpha_P \right) \left(\frac{\Delta P_P}{P_P} \right) \quad (4-11)$$

Preferred import prices may be written as

$$P_P = P_X(1 + t) + P_X \Delta t \quad (4-12)$$

where P_X is export price. The total derivative of (Eq. 4-12) yields

$$\Delta P_P = \Delta P_X(1 + t) + P_X \Delta t \quad (4-13)$$

Dividing (Eq. 4-13) by (Eq. 4-12), considering $P_X = 0$ and assuming infinite elasticities of supply, the changes in preferred prices can be expressed as

$$\frac{\Delta P_P}{P_P} = \frac{\Delta t}{1 + t} \quad (4-14)$$

The total expansion in imports from the preferred country that would follow as a consequence of the preferences granted is expressed, using (Eq. 4-14) as

$$\frac{\Delta M_P}{M_P} = \left(\alpha_P \varepsilon + (1 - \alpha_P) \sigma \right) \left(\frac{\Delta t}{1 + t} \right) \quad (4-15)$$

A change in imports from the preferred country occurs in two phases. First, the tariff is reduced only for preferred goods M_P hence only the price for this good P_P falls. Second, as consequence

of the decrease in the price of the preferred good, consumers in the importing country substitute their consumption of M_N for the now less costly M_P .

Rearranging equation (Eq. 15) and substituting α_N for α_P we have

$$\frac{\Delta M_P}{M_P} = (\varepsilon + \alpha_N (\sigma - \varepsilon)) \left(\frac{\Delta t}{1 + t} \right) \quad (4-16)$$

The total change of preferred country imports portrayed in equation 4-16 consists of a trade creation and trade diversion component. Both of the components included in the equation can be separated into individual components. The first of these effects is the change in imports from the beneficiary country that is substituting for domestic production and consists of a consumption effect, as the price of such import has decreased. The effect from the preferred country perspective is defined as

$$TC = M_P \varepsilon \left(\frac{\Delta t}{1 + t} \right) \quad (4-17)$$

Trade creation will carry a positive sign as the elasticity of import demand multiplied by the reduction in tariff rates yields a positive number, as will equation 4-18 referring to the second component.

The second component of equation 4-16, the trade diversion effect, refers to the substitution of imports from non-preferred countries by preferred country imports that benefit from tariff reductions and is expressed as

$$TD = M_P \alpha_N (\sigma - \varepsilon) \left(\frac{\Delta t}{1 + t} \right) \quad (4-18)$$

The formation of preferential agreements clearly influences tariff revenues. The change in revenue is equivalent to the sum of preferred imports times the preferential tariff rate and the

amount of non-preferred imports times the tariff rate for non-beneficiary countries and can be expressed as

$$\Delta ID = M_P t_P + TD t_N \quad (4-19)$$

where

ID= import duties

t_P = tariff rate for preference beneficiary

t_N = tariff rate for non-preference beneficiary

The use of a utility function under the assumption of homogeneity suggests that imports are equally substituted for domestic production. The use of import demand elasticities permits the use of import data without the need for domestic production data. However, from equations (Eq. 4-17) and (Eq. 4-18), which are used to calculate trade flows, it is clear that knowledge of import demand elasticities and the elasticities of substitution between preferred and non-preferred imports is necessary. However, these values are not readily available particularly at such a level of disaggregation.

Values for the elasticities used in this analysis are based on Busse, Borrmann and Grossmann (2004), who presented elasticities at the four-digit level and provided three general scenarios that established a range of values: low, mid and high. The analysis considering three different elasticity values allows for upper and lower bounds to be established. This provides a broad scope for assessing how responsive and sensitive the results are to changes in these elasticity values. In addition, three distinct categories of imports: agricultural products, raw materials and manufactured goods were identified.

The elasticities used by these authors to analyze the trade effects of an EPA between the EU and ECOWAS were drawn from the literature and they note these are consistent with elasticities from other developing countries. ECOWAS are part of the ACP and, although a

much larger bloc than the OECS, it is likely that their import structures would not differ greatly from the OECS. Hence, the elasticity values provided by Busse, Borrmann and Grossmann (2004) were used as a basis for assumed elasticities in this study.

As products are categorized into increasingly disaggregated categories elasticity values can be expected to increase, as more competition exists among more similar products. Kee, Nicita, and Olarreaga (2004) estimated elasticities for different countries at the three and six digit level and found that on average, the latter estimates were 39% higher than the former. Hence, the values of assumed elasticities in this study are adjusted to be 39% higher than those provided by Busse, Borrmann and Grossmann (2004) and they are presented in Table 4-1.²¹

Scenarios Considered and Available Data

Trade negotiations concerning trade liberalization are often lengthy and incremental. The Economic Partnership Agreements, as any type of trade negotiation, will likely contain provisions for gradual phased reductions in tariffs. Although phased liberalization processes are usually the norm, simulations conducted in this study assume the complete and immediate elimination of all import tariffs. This assumption allows the calculation of static effects under the most radical type of liberalization and trade and fiscal impacts would reflect long term and perhaps future end scenarios. In reality, likely effects of liberalization are actually lessened by the lengthy negotiations and implementation phases.

The analysis and simulations of the empirical model were carried out for each individual OECS member. Four alternative possible trade liberalization scenarios were simulated using three different elasticity values. Analysis was conducted using data available for three different

²¹ Although Kee, Nicita, and Olarreaga (2004) estimated elasticities at the three and six digit level, the 39% difference noted was used in the case of changing the four digit level values presented by Busse, Borrmann and Grossmann (2004). This choice was arbitrary but does not deter from the usefulness of the analysis as a range of upper and lower bounds were established.

years and the average for those three years is presented in the results section.²² In the spirit of the EPA currently being negotiated, the first scenario considers the complete elimination of existing import tariffs on all 27 members of the European Union while tariff barriers for all other countries are left intact.

The liberalization scenarios that follow build on the first case. Consequently, the second scenario contemplates, in addition to the removal of tariffs on the EU, the removal of all tariff barriers and existing exemptions for all members, including candidates for membership and associate members, of CARICOM and the OECS. The third scenario includes the removal of barriers to the EU, the major Caribbean states, the three members of NAFTA and Puerto Rico. The final scenario contemplates the OECS members joining the FTAA. This last case, however, would also include the EU, allowing for a rather comprehensive liberalization scheme.

The empirical model used obtains values for trade creation, trade diversion and changes in import duties. Simulations and analysis provide a means of comparing and understanding the implications of alternative policy scenarios for the OECS. The data utilized in the application is based on the Harmonized Commodity Coding System (HS) at the eight-digit trade level.²³ At this level of aggregation, the EU has identified 14,758 tariff lines.²⁴ The number of tariff lines at this level of aggregation far exceeds the number of tariff lines imported into the OECS. The data available contained an average of 3638 tariff lines and ranged from 4162 in Antigua and Barbuda to 2843 in St. Vincent and the Grenadines.

²² Data for 2002, 2003 and 2004 were utilized for Dominica, Grenada, St. Kitts and Nevis, St. Lucia and St. Vincent and the Grenadines. However, data was available for 2004 only in the case of Antigua and Barbuda.

²³ The data was provided by Resources International in Antigua.

²⁴ Stevens and Kennan (2005) explain that at the two-digit level there exist 96 categories, at the four-digit level 1,251 categories, at the six-digit level 5,705. They also indicate that up to the six-digit level the classification system is common to all countries. At the eight-digit level variations exist as countries refine their national tariff lines. The United States International Trade Commission website indicates that 6330 tariff lines at the eight-digit level of aggregation exist in the U.S.

Calculations at the eight-digit level avoid the aggregation of tariff rates and allow for individual tariff line analysis. The information calculations at this level of aggregation can convey is of value as product categories most affected by tariff elimination can be closely identified. This information can be very useful for trade negotiators and policymakers alike as they negotiate the reduction phases in actual trade agreement negotiations.

The Pre-Simulation Tariff and Trade Structure

Trade related taxes in the OECS include a broad assortment of taxes applied. In this context, each country has its own series of taxes levied, of which import duties are only one component. The assortment of border taxes includes consumption taxes, customs service taxes, environmental levies, solid waste levies, compulsory standard fees, excise taxes and others. Amid all these, consumption taxes and import tariffs respectively were the most significant in generating government revenues.

The relative importance of trade-related taxes is summarized in Table 4-2. These taxes represent an average of 31.2% of total government revenues for the OECS. Nearly half of total government revenues in Antigua and Barbuda, Dominica, Grenada and St. Lucia are trade related. However, St. Kitts and Nevis and St. Vincent and the Grenadines rely on trade related taxes for 32.1% and 18.6% of their government revenue.

Import duties are clearly an important component in the array of trade taxes established by OECS members and they correspond to an average of 23.7% of the total trade taxes. Dominica has, at 23.1%, the lowest rate for import duties as percentage of total trade taxes while St. Vincent has the highest at 32.0%. Import duties, in terms of total government revenue, average in excess of 8.7% for all OECS members and range between 6.0% and 15.6% in St. Vincent and the Grenadines and St. Lucia, respectively.

The average tariff structure in place between 2002 and 2004 is presented in Table 4-3. Total trade taxes and tariff rates were calculated, for each individual OECS member, from the available data for each element in the broad array of taxes and represent the actual levied charges and tariffs drawn for the time period noted. Tariff rates for EU; EU and Caribbean; EU, Caribbean and NAFTA; and EU plus FTAA scenarios were provided in columns 2 through 6. The trade taxes and tariff rates were aggregated at the two-digit level and classified into three categories: agricultural products, raw material and manufactured goods. Additionally, an aggregate rate is provided and corresponds to the rates prior to the three-tier classification.

Average total trade taxes represent the sum of the broad assortment of trade charges levied by each individual country. The average total trade taxes levied indicated that these were highest in St. Vincent at 43.7% and lowest in St. Lucia at 25.3%. When considering the three-tier classification it is clear that raw materials had the lowest levels of protection while agricultural products tended to have the highest in all OECS countries.

Similar to average total trade taxes, tariff rates indicated that the lowest level of protection was afforded to raw materials. Higher levels of protection were granted to manufactured goods and even higher ones for agricultural products. Grenada had the lowest tariffs for raw materials while Dominica had the highest. In terms of manufactured goods, import duty rates were highest in St. Vincent at a rate of 13.3% and were lowest in Grenada at a rate of 8.4%. Tariff rates for agricultural products averaged 15.6 % for all OECS members. Aggregated average tariff rates ranged from 8.6 % to 14.6% in St. Lucia and St. Vincent respectively.

Tariff rates aggregated on the basis of each simulation scenario follow the same pattern. Tariffs on agricultural products are highest while raw materials have the least protection. In aggregate terms the tariff rates for the European Union and FTAA scenario are highest, as they

are closely related to average tariffs. The lowest existing tariffs correspond to the scenario including the EU and Caribbean. This clearly reflects the already lower barriers existing within the Caribbean.

Utilizing the 8-digit data available for the most recent year, 2004, it is clear that the most important sources of imports for all OECS were the United States and other Caribbean countries. This is consistent with data from 1980 and 2000 presented in Chapter 2. The total CIF value of imports in 2004 ranged from Eastern Caribbean Dollars (XC\$) 135.5 million to XC\$1.183 billion in St. Vincent and the Grenadines and Antigua and Barbuda, respectively. Table 4-4 presents the 2004 share of imports for the top ten sources.

In terms of the most significant products imported, fuels, construction material, some foodstuffs and transportation and telecommunication equipment, all ranked in the top ten imports. The top ten imports for each OECS member for 2004 is presented in Table 4-5. In all cases except St. Vincent and the Grenadines the top imports were fuels. Construction material such as cements and plywood were also significant, as were other intermediate products like switches, electronic components and vehicles.

Simulation Results

Trade Effects

Trade effects from the simulations of the alternative trade liberalization scenarios are presented in Tables 4-6 to 4-10. Values for trade creation, trade diversion, net trade creation, total trade effects and trade effects relative to total imports are presented.

The simulation results of a possible EPA with the EU are presented in Table 4-6. Trade diversion exceeds trade creation for all OECS members for all elasticity values. In all OECS cases the difference between trade creation and trade diversion increases negatively as elasticity

values increase. This first scenario simulating an EPA clearly suggests that in general terms trade liberalization with the EU alone leads to significant trade diversion.

Total trade effects, as a percent of baseline imports, are relatively small for all three elasticities in the EU trade liberalization scenario. At the low elasticity value trade effects represented between 0.9% and 3.1% of baseline imports in St. Kitts and Nevis and St. Vincent and the Grenadines, respectively. Using the mid elasticity scenario total trade effects ranged from 1.4% to 4.9% while in the high elasticity scenario the figures stood at 1.9% and 6.7%. St. Kitts and Nevis showed the smallest total trade effects while St. Vincent and the Grenadines had the highest in these cases as well. In terms of monetary value, the total trade effects were largest in St. Lucia while the lowest were in Dominica. Total trade effects for the three elasticity values ranged from XC\$49.7 to XC\$110.9 million for the OECS as a group. The trade effects as a percent of the baseline imports, considering the OECS average, were rather small and ranged from 1.4% in the low elasticity case to 3.1% in the high elasticity scenario.

The trade effects from the second scenario, where all import duties and exemptions from CARICOM and OECS are lifted in addition to tariff elimination on EU imports, are presented in Table 4-7. The results from this scenario were quite similar to the previous analysis. For all OECS members and for all elasticity values trade diversion exceeds trade creation. The difference between trade diversion and trade creation, however, was lessened as trade liberalization was broadened with the inclusion of complete free trade with the Caribbean. In general, trade diversion is smaller in this scenario yet results continue to show negative net trade creation.

The total trade effects as a percentage of baseline imports are, as in the first scenario, also rather small. In the case of the low elasticity values, total trade effects as a percentage of

baseline imports range from 1.1% in Antigua and Barbuda to 3.7% in St. Vincent and the Grenadines. In the mid and high elasticity scenarios the figures range from 1.7% to 5.8% and 2.3% to 7.9% respectively. For the group of OECS members, trade effects as a percent of baseline imports under EU and Caribbean liberalization, range from 1.7% in the low elasticity case to 3.6% in the high elasticity case

While total trade effects as a percent of total imports are not greatly dissimilar among most OECS members, it is markedly different for St. Vincent, whose values are virtually twice the average of the other countries. Hence, the most affected country in this scenario is St. Vincent and the Grenadines while the least affected is Antigua and Barbuda. In terms of absolute trade effect values, again St. Lucia had the highest impacts while Dominica had the lowest. This second liberalization scenario is not very different than that involving the EU alone. This effect is perhaps related to generally low tariffs on Caribbean imports despite occasional exemptions.

The impacts of trade liberalization under scenario three, where liberalization is extended to members of NAFTA and Puerto Rico in addition to the removal of tariffs on EU imports and the elimination of exemptions from the larger CARICOM, are shown in Table 4-8. In this case, trade creation far exceeds trade diversion for all three elasticity scenarios. In terms of trade flow values trade creation increases significantly while the increases in trade diversion are rather small. This is not unexpected as members of NAFTA are very important OECS trading partners, the United States being the single largest source of imports for OECS members. When compared with the second trade scenario the inclusion of NAFTA leads to virtually an eight-fold increase in trade creation in Antigua and Barbuda. The other members of the OECS follow a similar trend although increases in trade creation are not as high.

In terms of the value of total trade effects these also increase in proportions similar to those of trade creation. However, the total trade effects as a percentage of baseline imports change from being relatively small to relatively modest, ranging from 3.4% to 15.0% under all three elasticity scenarios. In the case of the low elasticity scenario alone, values range from a low of 3.4% in Dominica to 7.4% in St. Vincent and the Grenadines. In the mid and high elasticity scenarios, trade effects as a percentage of total imports range from 5.2% to 11.3% and 6.9% to 15.0% respectively for the same countries. In relative terms, under this liberalization scenario, the most affected country was St. Vincent while the least affected was Dominica. In terms of absolute trade effect values, again St. Lucia had the highest impact while St. Vincent and the Grenadines had the lowest. For the OECS as a group, total trade effects range from XC\$164.1 million in the low elasticity case to XC\$331.3 million in the high elasticity scenario and trade effects as a percent of total imports lie between 4.4% and 8.8%, depending on the elasticity value.

The trade effects obtained in simulations where trade liberalization is consistent with an FTAA plus the EU are presented in Table 4-9. The results in this case virtually mimic the previous scenario. The differences in values are minimal and perhaps reflect the fact that trade between the OECS and Latin American countries is very small and would not increase significantly regardless of tariff elimination.

The total trade effects as a percentage of total imports remain virtually unchanged ranging from 3.4% to 17.9%. The average values for the OECS ranged from 4.6% to 9.2%. As was the case earlier, values of relative trade effects are quite similar for all OECS members with the exception of St. Vincent and the Grenadines where they are higher. In terms of absolute trade

effect values, St. Lucia had the highest impact while St. Vincent and the Grenadines had the lowest.

Results for the OECS as a group indicate that total trade effects for all trade liberalization scenarios simulated, in terms of total trade effects as a percentage of total imports, are rather small. In the case of a likely EPA with the EU total trade effects as a percentage of total imports for the three elasticity scenarios range from 1.4% to 3.1%. Trade liberalization that encompasses the EU plus the Caribbean in the second scenario indicate that these values range from 1.7% to 3.6%. When considering the scenario inclusive of NAFTA the values range from 4.4% to 8.8%. Finally, in the EU plus FTAA scenario total trade effects as a percentage of total imports range between 4.6% and 9.1% (Table 4-10).

Tariff Revenue Effects

The removal of import duties from the assortment of trade taxes levied by OECS members certainly impacts government revenues. Equation 4-19 allows the quantification of the total change in import duties following the elimination of tariff barriers. Although it is clear that revenues derived from tariffs will be eliminated, the effect on total trade taxes is not unambiguously defined given that the other trade taxes are left intact. In fact, an increase in the revenues generated by these other trade taxes is possible if trade liberalization leads to significant increases in the value of trade creation. Trade created is subject to levies imposed by the entire array of other border taxes.

Revenue effects evaluated in this analysis focus on the primary and direct effects that result from the loss of tariff revenue. Additional simulations were performed to calculate the counterbalancing effects that result from increased volumes of trade subject to the broader array of trade taxes. The results obtained indicate that counterbalancing effects under the low, mid and

high scenarios are rather small. The discussion that follows takes into account the average values obtained for all three elasticities.

The revenue effects from the elimination of tariffs in a possible EPA with the EU are summarized in Table 4-11. The reduction in revenue generated by import duties, as a percentage of total baseline import duties collected, averaged -10.0% in Antigua and Barbuda and -21.1% in St Lucia. For the OECS as a group this average value was -15.3%. In terms of tariff revenue as a percentage of total trade taxes, for the OECS this figure stood at -4.4%. For individual OECS members, the reduction ranged from a low of -3.12% in Antigua and Barbuda to a high of -6.7% in St. Lucia. The change in import duties consequence of tariff elimination in terms of total government revenue, represent a decrease ranging between -1.1% in St. Kitts and Nevis to -3.28% in St. Lucia. For the OECS as a grouping this figure was -1.7%. The reduction in import duties as a percentage of GDP averaged -0.5% for the group.

In general the revenue effects from the elimination of tariffs on European imports are rather small. However, it is also clear that there is a difference in how much each of these countries is affected by EU trade liberalization. The country whose revenues are least affected is St. Kitts and Nevis. The country most affected, in relative as well as in absolute value of flows, is St. Lucia.

Counterbalancing effects on total tariff revenue losses can be attained when trade creation exceeds trade diversion and net trade creation is subject to levies from the broad assortment of other border charges. The net total revenue effects, considering these counterbalancing taxes, in the EU liberalization scenario is presented in Table 4-12. It is clear that the elimination of tariffs on EU imports has a further negative effect on most OECS countries. The change in other border taxes due to net trade creation, which in this scenario is negative, suggests that for the

OECS trade liberalization with the EU leads to losses beyond those incurred from the elimination of import duties alone. While the impact of the change in import duties in terms of GDP is -0.46% without the inclusion of counterbalancing effects, this figure is increased to -0.58% as consequence of negative net trade creation and the further loss of tariff revenues.

The impact on revenue that derives from the elimination of duties and exemptions on imports from CARICOM and intra OECS trade, as well as EU liberalization in the second scenario, is presented in Table 4-13. The reduction in revenue as a percentage of total import duties collected, range between -13.2% in Antigua and Barbuda and -23.3% in St. Vincent and the Grenadines. In terms of the effects of tariff elimination on total trade taxes, the reduction in revenues range from -4.1% to -7.5% in Antigua and Barbuda and St. Vincent and the Grenadines respectively. The revenue effects in terms of total government revenues show losses ranging between -1.9% in St. Kitts and Nevis and -3.6% in St. Lucia. Finally, in terms of GDP the reduction in tariff revenues represents about -0.6% for all countries with the exception of St. Lucia, where case the figure stands at -0.9%. The country most affected, as consequence of the removal of tariffs, in terms of net values is St. Lucia while the least impacted is Dominica.

For the OECS as a group, the elimination of tariffs on EU and Caribbean imports represents a reduction of -19.6% in revenues relative to total baseline import duties. In terms of the percentage of total trade taxes, there is a -5.7% reduction in revenue. The loss of tariff revenues, in terms of total government revenue for the OECS, is rather small. In this case revenue losses correspond to -2.2% while in terms of GDP these represent a decrease of -0.6%

The counterbalancing trade tax effects from tariff liberalization in this scenario are, as in the previous scenario, negative. Again large negative net trade creation values lead to a further decrease in the collection of import duties. The change in import duties, in terms of government

revenue, amounted to -2.2% without considering counterbalancing effects. When the negative counterbalancing effects were included the change in import duties, as a percent of government revenues, grew to -2.4%. For the group this represented an additional loss of XCS\$5.9 million as consequence of this liberalization scheme (Table 4-14).

Trade liberalization in the third scenario, which includes tariff elimination on EU, Caribbean and NAFTA imports, has much larger consequence on revenues than the previous two case scenarios. Revenue effects are presented in Table 4-15. Overall, revenue shortfalls increase four to sevenfold and the decline in tariff revenues as a percent of total import duties collected ranges from -73.9% in Dominica to -85.1% in Antigua and Barbuda. This large change relative the prior cases are indicative of the important role the United States and Canada have on OECS imports.

The significance of import tariff revenue reductions in terms of total trade tax revenue represents an average of -23.6%. With the exception of Dominica and Grenada, where this figure stands at less than -20%, all other countries see a decrease in revenues in excess of -25%. In terms of total government revenues collected, the decline ranges from about -5% in St. Vincent and the Grenadines to about -13% in Antigua and Barbuda. The decline in revenues relative to GDP ranges from -2% to -3% in Dominica and St. Vincent and the Grenadines, respectively.

The inclusion of the members of NAFTA in the liberalization scenario clearly raises the scope for trade creation. In this case trade creation far outweighs trade diversion. Counterbalancing effects from other trade taxes are quite significant yet they do not nearly compensate for tariff revenue losses. Inclusive of counterbalancing taxes the reduction in tariff revenues in terms of total government revenues range from -4.4% in St. Vincent to -11.6% in St.

Lucia. For the OECS, net of counterbalancing taxes, tariff revenue losses represent -8.2% of GDP.

The estimated revenue effects from the elimination of tariffs on imports from a FTAA and the EU are summarized in Table 4-17 and virtually mirror the third liberalization scenario. It is noticeable, as in the trade effects case, that the inclusion of FTAA members only causes a marginal change. The reduction in import duties, as a percentage of total import duties collected, is within the range of -78.6% in Dominica and -91.9% in St Vincent. The inclusion of FTAA members has a larger effect on revenues for St. Vincent than for any of the other OECS members.

When tariff elimination is considered in terms of its effects on total trade taxes, this reduction ranges from an average of -18.1% in Dominica to -27.0% in St. Lucia. In terms of total government revenue, tariff elimination ranges between -7.5% in Dominica to -13.1% in Antigua. When the reduction in tariff revenues is considered in terms of size of GDP, these are at about -3%. The introduction of counterbalancing effects is very similar to the previous scenario. These do not nearly compensate for losses in import duties yet they average XC\$28.4 million for the OECS (Table 4-18).

Imports Most Affected by Tariff Elimination

Using the Verdoorn based model, with highly disaggregated eight-digit import data, permits the identification of products that have the largest trade effects and those that most affect revenues derived from import duties and other border taxes. This information can be useful to policymakers and trade negotiators when in the process of negotiating trade liberalization agreements, especially within the context of special and differential treatment. Tables A-1 through A-24 in appendix A present the ten most affected products for each individual OECS member according to each liberalization scenario. Due to the similarity in results obtained, only

the mid elasticity scenario for year 2004 is presented. The sensitive products are sorted and ranked by trade effects as well as by their impact on tariff revenue.

In Antigua and Barbuda the top ten most affected products from EU liberalization accounted for 25.3% of the total trade effect. Medications, alcoholic beverages, tires, cigarettes and some foodstuffs were among these products. In terms of which products most affected revenues, the top ten products accounted for 26.7% of the total change in tariff revenue.

For the case of EU and Caribbean liberalization the top ten most affected products comprised 27.8% of total trade effects. Under this scenario, transmission apparatus, rice, and cigarettes accounted for variations and additions to the previous list. In terms of the change in import duties the top ten products accounted for 28.9% of total tariff revenues. The inclusion of NAFTA to the trade liberalization scenario increased the diversity of products included in the top ten most affected products. In terms of trade effects the top ten products comprised 14.5% of the total trade effects while they accounted for 13.3% of the change in total tariff revenues. Other foodstuffs and motor vehicle parts were included into the mix of top ten products under these scenarios. The inclusion of FTAA left these conditions virtually unchanged.

Total trade effects in the EU trade liberalization scenario for Dominica amounted to XC\$6.6 million. The top ten most affected categories accounted for 29.1% and 42.6% of total trade effects and total tariff revenue effects respectively. The top category affecting import duties consisted of frozen fowl wings while other items that made the list were various alcoholic beverages, cigarettes, medicaments and cheese. The inclusion of the larger Caribbean in the liberalization scenario modified the top ten most affected products list by the inclusion of transmission equipment and wooden furniture. The top ten categories accounted for 34.3% of

total trade effects and 39.5% of total tariff revenue effects. The total trade effect under this scenario amounted to XC\$8.6 million while the total tariff effect was XC\$4.6 million.

The third trade liberalization scenarios that included NAFTA and the fourth scenario of an FTAA were almost identical in the manner they affected the top ten import categories. These accounted for 24.7% and 25.1% of total trade effects in the former and the latter scenarios respectively. They also accounted for 26.6% of total tariff in the NAFTA scenario and for 26.8% of total tariff effects in the FTAA scenario. New inclusions into the top ten lists were other cuts of frozen fowl, plywood, and vehicle parts.

Trade liberalization with the EU led to trade effects in the amount of XC\$15.4 million and tariff revenue effects of XC\$6.5 million in Grenada. The top ten categories of most affected products comprised 30.3% and 30.7% of total trade effects and total tariff revenue effects, respectively. Vehicles, medicaments, alcoholic beverages and some food products were in these top categories. When liberalization is further extended to include other Caribbean countries the categories do not vary widely. However, gasoline suddenly becomes the top category accounting for 10.6% of the total tariff revenue effect. Total trade effects under this scenario were XC\$18.3 million while total tariff effects amounted to XC\$9.1 million.

The scenarios inclusive of NAFTA and the FTAA are again virtually identical. Total trade effect amount to XC\$44.4 million in the former and XC\$46.3 million in the latter. In terms of total tariff revenue effects, these account for XC\$33.5 million and XC\$35.3 million respectively. The most significant changes over the previous scenarios, were the inclusion of transmission apparatus- which become the top most affected category- and of plywood, other foods, stoves, and automatic machines for domestic use.

In St. Kitts and Nevis the top ten most affected products in the EU trade liberalization scenarios accounted for 34.8% of total trade effects. Vehicles, medication, alcoholic beverages, aerated beverages, tires, and some foodstuffs were among these products. In terms of which products most affected import revenues, the top ten products accounted for 37.5% of the total change in tariff revenue. Total trade effects amounted to XC\$6.7 million while total tariff revenue effects were XC\$3.1 million.

For the case of EU and Caribbean liberalization the top ten most affected products comprised 42.6% of total trade effects. Under this scenario a noticeable change was the inclusion of other gas oils and gasoline into the top three categories. These two categories accounted for 27.3% of the total tariff revenue effects. The inclusion of NAFTA increased the diversity of products included in the top ten most affected products. In terms of trade effects the top ten products accounted for 23.2% % of the total trade effects while they accounted for 22.6% of the change in total tariff revenues. The inclusion of transmission apparatus in the top ten categories was the most noticeable change. In fact this category was the second most affected product. The inclusion of FTAA left these conditions virtually unchanged.

Total trade effects under the EU trade liberalization scenario for St. Lucia amounted to XC\$25.5 million while total tariff revenue effects were XC\$13.5 million. The top ten most affected categories accounted for 36.4% and 45.7% of total trade effects and total tariff revenue effects respectively. The top category included vehicles, alcoholic beverages, aerated waters, medicaments, and transmission apparatus. The inclusion of the larger Caribbean in the liberalization scenario modified the ranking of the top ten most affected products but not the content. The top ten categories accounted for 42.8% of total trade effects and 47.4% of total

tariff revenue effects. The total trade effect under this scenario amounted to XC\$28.5 million while the total tariff effect was XC\$16 million.

The third and fourth scenarios inclusive of NAFTA and the FTAA scenario were again virtually identical. Total trade effect amount to XC\$65.1 million in the former and XC\$66.8 million in the latter. In terms of total tariff revenue effects, these account for XC\$52.5 million and XC\$55.2 million respectively. The most affected category was transmission apparatus and additional inclusions into the top ten categories incorporated plywood, detergents, and footwear. The top ten most affected categories under these scenarios accounted for about 20% of total trade and tariff revenue effects.

Trade liberalization with the EU resulted in total trade effects of XC\$6.5 million and tariff revenue effects of XC\$3.5 million in St Vincent and the Grenadines. The top ten categories of most affected products comprised 31.9% and 39.1% of total trade effects and total tariff revenue effects, respectively. Included in the top ten most affected products were refrigerators, different types of foods medicaments and stoves. When liberalization includes other Caribbean countries the product list remains virtually unchanged. Total trade effects under this scenario were XC\$7.9 million while total tariff effects amounted to XC\$4.2 million.

The EU, Caribbean and NAFTA scenario and the EU plus FTAA scenario were again very similar. Total trade effect amount to XC\$ 18.9 million in the former and XC\$19.1 million in the latter. In terms of total tariff revenue effects, these account for XC\$15.3 million and XC\$16.8 million respectively. The most significant changes over the previous scenarios were the inclusion of several construction materials and household goods. Under both of these scenarios plywood is most affected product by trade effects as well as the one that most affects tariff

revenue. Other additions to the list are wood, frozen cuts and offal of fowl, footwear, and automatic machines for domestic use.

Some very broad generalizations can be made on the basis of the rankings of most sensitive products. Products that have the largest trade and tariff revenue effects include electrical equipment, parts for vehicles and vehicles, medicines and liquors. In some cases gasoline and other oil products were also ranked high. In terms of products that have a significant effect on the collection of tariff revenues these included food products, alcoholic beverages, aerated beverages, transmission apparatus and petroleum products. The inclusion of the FTAA virtually has no effect and hence sensitive products in the EU, Caribbean plus NAFTA scenario and the EU plus FTAA scenario are virtually identical.

Policy Implications

A highly stylized model like the one employed in this analysis contains various limitations imposed by rather restrictive assumptions. When addressing policy issues, other broader considerations must be taken into account. However, certain implications derived from this type of analysis can serve as guidelines in policy decisions. The usefulness of this type of analysis, at a highly disaggregated level, can be extended to real, practical application when in the realm of trade negotiations. The identification or pinpointing of products that most affect tariff revenue, or have the largest trade effects, can be very useful in setting timetables and liberalization phases. However, beyond usefulness in many settings, the analysis performed can be viewed in the broader issue of trade liberalization as policy direction.

Prevailing conventional wisdom, primarily derived from political rather than economic considerations, suggests that the effects of trade liberalization would be very damaging to the OECS in light of their small size and vulnerabilities. The implications are that exceptions and special considerations should be given to small countries when dealing with trade liberalization

issues. Furthermore, there are those who have argued against broader liberalization and for the deepening of regional integration processes (Ocampo 2002; Egoumé-Bossogo and Mendis 2002).

The findings from this dissertation provide empirical support to a different narrative and insights from this analysis should help in assessing the more appropriate courses of action for the OECS. These results coincide with the broader theoretical arguments and policy suggestions made by Vamvakidis (1999), Schiff (2002), McCoy (2000), and Schiff and Winters (2003). These suggest that for small countries such as the OECS broader trade liberalization is superior to limited regional trade agreements.

Schiff (2002) has argued that broad multilateral trade liberalization would best suit these smaller nations particularly if agreements could be reached with more developed nations. His work also suggested that liberalization with the EU alone in the form of a regional trade agreement would likely lead to a reduction in welfare for the small countries of the Caribbean. These, he argues, would be better off by joining an FTAA and by signing free trade agreements with members of the Organization of Economic Cooperation and Development (OECD), rather than committing to an EPA with the EU.

Similar arguments are made by Schiff and Winters (2003) who suggest that small countries would be better off by moving toward broader north-south trade liberalization rather than south-south regional integration. McCoy (2000) has also argued that despite the long tradition of regionalism in the Caribbean, broader integration into the global economy is preferable to deeper regional integration. In a broader context, Vamvakidis (1999) has shown that the preferable path for economies embarking on liberalization is nondiscriminatory openness rather than regional trade agreements.

This study seems to support the theoretical postures noted above. The implications derived from this research, and those from the Greenway and Milner (2003) and Gasiorok et al. (2006), provide empirical support to broader theoretical arguments that are consistent with the notion that small countries like the OECS would be better served by moving away from regionalism and move closer to multilateral liberalization.

While this study addresses the trade and fiscal impacts of trade liberalization using a static framework of analysis, dynamic effects are not even considered. It is likely that dynamic considerations would be relevant and impact these economies positively, therefore lending additional support for the arguments in favor of broader liberalization. In fact, even if the issue of trade liberalization is solely framed as a fiscal impact problem, results from this study suggest the impact on government revenues is modest. When addressing fiscal revenues alternative tax policies might be considered to expand the tax base rather than relying on the more distortionary trade taxes.

Although it is generally assumed that dynamic effects introduced by trade liberalization are positive, considerations on the likely dynamics within an economy can be a venue for speculation. While trade liberalization is often feared by policymakers and interest groups likely to be affected, it is perhaps a mechanism through which incentives, entrepreneurship and other dynamics are affected.

An illustrative example of what may happen is provided by St. Kitts and Nevis, which until recently considered the idea of existing without its sugar industry unfathomable. This industry was virtually shut down and replaced by other ventures, of which the electronic component assembly industry is one example. One could extrapolate this example to the setting where the fears of liberalization and its consequences are portrayed as dramatic. If the example provided is

and indication, it is more likely that the benefits brought about by the dynamics of liberalization will more than outweigh the costs.

Discussion and Implications

The trade liberalization scenarios simulated and discussed above provide surprising insight into the effects of tariff elimination. Although it is clear that simulations performed were limited to the removal of import duties while a broad array of other border charges remained, results were nevertheless noteworthy. Trade and tariff revenue effects in all scenarios simulated were either small or modest. In terms of net trade creation and total trade effects it is clear that there is an ordering of results. Broader liberalization leads to higher total trade effects and higher net trade creation.

Trade liberalization with the EU in the form of an EPA lead to net negative trade creation, particularly in the mid and high elasticity scenarios. For the OECS, trade liberalization with Europe, in the form of an EPA, not only leads to trade diversion but also lowers government revenue due to negative net trade creation. The liberalization scenario of the EU plus the larger Caribbean resulted in positive net trade creation for the OECS. Tariff revenue effects remain small and both these results are perhaps related to the OECS already having low barriers on Caribbean imports despite occasional exemptions.

The inclusion of NAFTA to the EU and Caribbean in the third scenario lead to large changes in net trade creation. This was expected as the United States and Canada are important trade partners for the OECS. Despite significant increases in trade creation, total trade effects remain modest. Tariff revenues in this broader liberalization scenario, however, are larger yet modest. The EU plus FTAA scenario is virtually identical to the EU plus NAFTA scenario. This is perhaps due to limited trade between these countries and the OECS and suggests that the FTAA would not increase trade significantly. It remains clear from the results obtained from

these simulations that the elimination of import duties in the OECS would lead to small changes in trade and tariff effects. The broader the trade liberalization regime, the higher are the welfare gains.

The identification of products most affected by trade liberalization in terms of trade effects, and those that have the largest effect in tariff revenue collection for all OECS members are primarily those which have no domestic production. However, there are a few items one could speculate could be produced domestically. Such products include oil derivatives, aerated beverages, sweet biscuits, sausages, fowl, cheeses, beer, spirits and some other foods among agricultural and raw materials. However, the most significant products in the lists of most affected goods are manufactured goods such as vehicles, vehicles parts, electrical apparatus, medicines, and household durable goods. The identification of these products can prove useful in the process of trade negotiations and the phasing in of liberalization schedules.

The overall picture that emerges from the above analysis is that the elimination of import duties in the OECS would lead to small changes in trade and tariff effects. The products most affected by liberalization suggest that consumers would gain from liberalization and the fear inspired by trade liberalization has very little merit in light of the results obtained. In fact, these results tend to support theoretical work of advocates for broader trade liberalization who have argued against further regionalization. In light of the findings in this study, the more appropriate courses of action for the OECS would follow the recommendations of those favoring broader liberalization.

Table 4-1. Assumed elasticity values

Product Category	Elasticity of Import Demand			Elasticity of Substitution		
	Low	Mid	High	Low	Mid	High
Agricultural Prod. (01-24)	-0.56	-0.97	-1.39	1.39	2.78	4.17
Raw Materials (25-27)	-0.83	-1.25	-1.67	2.78	4.86	8.34
Manufactured Goods (28-97)	-1.11	-1.53	-1.95	2.50	4.17	4.17

Table 4-2. Pre-simulation values for total imports and government revenues

	CIF Import value in XC\$	Total gov't revenues ¹ in XC\$	Total trade taxes in XC\$	Total import duties in XC\$	Total trade taxes as % gov't rev	Total import duty as % of trade taxes	Total import duty as % of gov't rev
Antigua & Barbuda	1,182,452,054	468,200,000	230,909,615	71,842,256	49.3	31.1	15.3
Dominica	369,459,384	210,600,000	87,215,790	20,126,588	41.4	23.1	9.6
Grenada	678,030,877	328,600,000	151,462,678	36,027,116	46.1	23.8	11.0
St. Kitts & Nevis	550,522,989	305,633,333	98,128,478	30,888,597	32.1	31.5	10.1
St. Lucia	1,251,803,345	483,666,667	236,905,241	75,248,170	49.0	31.8	15.6
St. Vincent	137,049,582	310,733,333	57,827,157	18,521,100	18.6	32.0	6.0
OECS Avg.	497,811,030	273,205,556	105,256,557	30,135,262	31.2	23.7	8.7

¹ ECCB data

Table 4-3. Trade tax and tariff structure for OECS members

	Average total trade taxes	Average tariff rates	Tariff rate for EU imports	Tariff rate for EU & Caribbean scenario	Tariff rate for EU & NAFTA scenario	Tariff rate for EU & FTAA scenario
Antigua						
Ag. Prod 01-24	31.94	14.66	16.66	9.69	14.10	13.98
Raw Mat.25-27	21.84	5.73	7.89	4.67	5.20	5.10
Mfg Prod 28-97	36.90	9.71	7.86	7.12	8.10	8.57
Aggregate Rate	35.89	10.54	13.14	7.65	9.20	9.54
Dominica						
Ag. Prod 01-24	40.92	17.08	18.60	8.84	14.85	14.87
Raw Mat.25-27	29.20	8.92	9.77	4.94	5.16	5.78
Mfg Prod 28-97	26.89	9.37	6.80	5.77	7.81	8.27
Aggregate Rate	28.84	10.43	8.16	6.23	8.90	9.26
Grenada						
Ag. Prod 01-24	36.06	14.25	16.09	9.48	14.29	14.36
Raw Mat.25-27	23.09	4.67	5.73	3.30	4.29	4.37
Mfg Prod 28-97	30.76	8.42	7.12	6.03	7.04	7.50
Aggregate Rate	31.31	9.08	8.14	6.46	8.09	8.47
St. Kitts						
Ag. Prod 01-24	36.47	12.83	16.30	8.46	12.50	12.58
Raw Mat.25-27	20.23	5.27	11.24	3.39	5.09	5.09
Mfg Prod 28-97	31.47	10.27	7.86	7.16	8.38	8.94
Aggregate Rate	32.12	10.61	8.78	7.33	9.06	9.52
St. Lucia						
Ag. Prod 01-24	32.54	14.44	18.33	10.99	14.26	13.83
Raw Mat.25-27	14.57	4.83	7.38	3.57	4.02	4.18
Mfg Prod 28-97	24.36	7.82	6.18	5.28	6.35	6.88
Aggregate Rate	25.27	8.61	7.46	6.02	7.49	7.94
St. Vincent						
Ag. Prod 01-24	47.13	20.57	20.69	19.91	20.51	20.47
Raw Mat.25-27	28.65	8.53	9.34	9.10	8.32	8.28
Mfg Prod 28-97	43.12	13.34	12.08	12.53	12.25	12.70
Aggregate Rate	43.70	14.56	14.10	14.20	13.98	14.20

Table 4-3 Continued

	Average total trade taxes	Average tariff rates	Tariff rate for EU imports	Tariff rate for EU & Caribbean scenario	Tariff rate for EU & NAFTA scenario	Tariff rate for EU & FTAA scenario
OECS Average						
Ag. Prod 01-24	37.51	15.64	17.78	11.23	15.09	15.02
Raw Mat.25-27	22.93	6.33	8.56	4.83	5.35	5.47
Mfg Prod 28-97	32.25	9.82	7.98	7.32	8.32	8.81
Aggregate Rate	32.86	10.64	9.96	7.98	9.45	9.82

Table 4-4. Ten major trading partners for OECS members in 2004

	Share 2004		Share 2004		Share 2004
Antigua & Barbuda		Dominica		Grenada	
United States	41.59	United States	34.23	United States	30.65
Puerto Rico	8.81	Trinidad & Tobago	17.75	Trinidad & Tobago	27.88
United Kingdom	8.30	Japan	6.65	Japan	7.89
Curacao	6.87	United Kingdom	6.52	United Kingdom	6.39
Trinidad & Tobago	6.09	France	3.35	Barbados	2.28
Japan	5.05	Barbados	3.30	Canada	2.16
New Zealand	1.90	St Lucia	2.75	Brazil	1.91
Italy	1.72	Canada	2.65	Germany	1.83
Canada	1.62	Jamaica	1.58	China	1.68
Barbados	1.56	China	1.36	France	1.51
St. Kitts & Nevis		St. Lucia		St. Vincent & the Grenadines	
United States	53.23	United States	35.98	United States	52.18
Trinidad & Tobago	14.12	Trinidad And Tobago	13.85	United Kingdom	8.98
United Kingdom	7.71	Us Virgin Islands	10.30	Canada	5.64
Puerto Rico	4.26	United Kingdom	6.77	Brazil	4.49
Canada	3.58	Japan	3.26	China	4.39
Japan	3.19	Barbados	2.90	Panama	2.27
Barbados	2.72	Finland	2.45	Puerto Rico	1.82
Germany	1.00	China	2.27	Honduras	1.56
(Dutch) St. Maarten	0.98	Canada	2.17	Trinidad and Tobago	1.48
Jamaica	0.83	France	1.51	Netherlands	1.33

Table 4-5. Top ten imports pre-simulation imports in 2004 for OECS members²⁵

Antigua			Dominica	
No.	Commodity code description	CIF value in XCS	Commodity code description	CIF value in XCS
1	Other Kerosene And Other Medium Oils (No Gas Oils)	85,705,428	Other Gas Oils	19,034,790
2	Yachts & Other Vessels: Sailboats With/Without Motor	70,121,673	Other Motor Spirit (Gasoline)	18,219,115
3	Other Gas Oils	51,188,107	Tallow	7,852,112
4	Motor Spirit (Gasoline)	46,578,316	Transmission. Reception Appara.: Portable Radio-Telep	7,084,185
5	Other Bunker "C" Grade Fuel Oil	38,871,884	Building Cement (Grey)	5,692,023
6	Completely Knocked Down 1500cc-1800cc,	16,924,623	Parts	5,685,097
7	Other Spark Ignition Vehicles, New	16,136,479	Cartons, Boxes & Cases, Of Corrugated Paper Paperboards	5,361,816
8	Articles Jewellery of Gold	10,792,738	Of A Cylinder Capacity Exceeding 1500cc- 1800cc	5,203,405
9	Of A Cylinder Capacity Exceeding 1500cc But Not Exceeding 1800cc	10,724,219	Other Cuts And Offals Of Fouls Frozen	4,982,344
10	Other Cuts And Offals Of Fouls Frozen	9,964,686	G.V.W. Not Exceeding 5 Tonnes:	4,884,145

²⁵ HS commodity code descriptions in Chapter 4 and Appendix A were drawn from eight-digit data provided by Resources International in Antigua.

Table 4-5. Continued

Grenada		St. Kitts		
No.	Commodity code description	CIF value in XCS	Commodity code description	CIF value in XCS
1	Other Gas Oils	32,279,708	Other Gas Oils	18,888,744
2	Other Motor Spirit (Gasoline)	31,424,294	Other Motor Spirit (Gasoline)	17,149,345
3	Of A Cylinder Capacity Exceeding 1500cc But Not Exceeding 1800cc	11,210,513	Bank And Currency Notes	7,376,960
4	Other Liquefied	9,120,883	Building Cement (Grey)	7,083,552
5	Building Cement (Grey)	7,655,636	Other Articles Of Iron Or Steel	6,974,002
6	Transmission Reception Appara.: Portable Radio-Teleph	6,956,883	Other Switches	6,927,291
7	G.V.W. Not Exceeding 5 Tonnes: Other	5,976,799	Other Food Preparations Not Elsewhere Specified	6,824,252
8	Other Printed Books, , Leaflets Similar Printed Matter	5,598,968	Other Printed Books, Brochures, Leaflets Similar Printed Matter	6,501,445
9	Of A Cylinder Capacity Exceeding 2000cc to 3000cc	5,445,792	Other Articles Of Plastics/Articles Of Other Materials Heading 39.01	5,493,583
10	Other Coaches, Buses And Mini-Buses Of A Seating Cap <= 21 Per	5,270,755	Other Plywood	5,194,474

Table 4-5. Continued

St. Lucia			St. Vincent and the Grenadines	
No.	Commodity code description	CIF value in XCS\$	Commodity code description	CIF value in XCS\$
1	Other Gas Oils	113,216,686	Other Cuts And Offal Of Fouls Frozen	6,365,472
2	Other Motor Spirit (Gasoline)	49,975,865	Other Plywood	5,633,354
3	Articles Of Jewellery Of Gold	30,078,050	Other Coniferous Wood	4,185,28
4	Transmission Reception Appara.: Portable Radio-Telephone	15,577,437	Tiles Cubes & Similar Articles	2,847,862
5	Gas Oils Exported Under The Processing Agreement	12,136,761	Other, Coniferous	2,656,595
6	Other Plywood	11,948,633	Other Sugar	1,826,682
7	Other Cuts And Offals Of Fouls Frozen	11,674,222	Processed Cheese, Not Grated Or Powdered	1,688,842
8	Other Printed Books, Brochures, Leaflets And Similar Printed Matter	11,443,127	Canned Corned Beef Of Bovine Animals	1,672,717
9	Building Cement (Grey)	10,887,528	Other Milk And Cream Not Containing Added Sugar Or Sweetening Matter	1,559,506
10	Other Compression-Ignition Internal Combustion Piston Engines	10,391,584	Sandals And Slippers	1,488,232

Table 4-6. Trade effects from tariff elimination on EU imports

		Trade creation (TC) in XC\$	Trade diversion (TD) in XC\$	TC-TD in XC\$	Total trade effects in XC\$	Trade effects as percent of total imports
Antigua & Barbuda	Low	3,078,595	7,234,316	-4,155,721	10,312,911	0.87
	Mid	4,732,945	12,484,483	-7,751,538	17,217,428	1.46
	High	6,411,978	17,430,220	-11,018,242	23,842,198	2.02
Dominica	Low	1,364,632	2,379,888	-1,015,256	3,744,520	1.01
	Mid	2,093,178	3,991,977	-1,898,799	6,085,155	1.65
	High	2,832,378	5,491,880	-2,659,502	8,324,258	2.25
Grenada	Low	2,780,180	5,759,972	-2,979,792	8,540,152	1.24
	Mid	4,115,824	9,561,609	-5,445,785	13,677,433	1.98
	High	5,465,681	13,040,578	-7,574,897	18,506,259	2.68
St. Kitts & Nevis	Low	1,385,319	3,230,576	-1,845,257	4,615,895	0.87
	Mid	2,054,907	5,375,838	-3,320,931	7,430,745	1.40
	High	2,731,823	7,339,908	-4,608,085	10,071,731	1.90
St. Lucia	Low	6,075,248	12,195,437	-6,120,189	18,270,685	1.46
	Mid	9,209,535	20,715,533	-11,505,998	29,925,068	2.39
	High	12,385,871	28,673,694	-16,287,823	41,059,565	3.28
St. Vincent & Grenadines	Low	1,598,293	2,618,217	-1,019,924	4,216,510	3.08
	Mid	2,386,600	4,363,981	-1,977,381	6,750,581	4.93
	High	3,184,157	5,964,901	-2,780,744	9,149,058	6.68
OECS Total	Low	16,282,267	33,418,406	-17,136,139	49,700,673	-
	Mid	24,592,989	56,493,421	-31,900,432	81,086,410	-
	High	33,011,888	77,941,181	-44,929,293	110,953,069	-
OECS Average	Low	2,713,711	5,569,734	-2,856,023	8,283,446	1.42
	Mid	4,098,832	9,415,570	-5,316,739	13,514,402	2.30
	High	5,501,981	12,990,197	-7,488,216	18,492,178	3.13

Table 4-7. Trade effects from tariff elimination on EU and Caribbean imports

		Trade creation (TC) in XC\$	Trade diversion (TD) in XC\$	TC-TD in XC\$	Total trade effects in XC\$	Trade effects as percent of total imports
Antigua & Barbuda	Low	4,306,823	8,108,934	-3,802,111	12,415,757	1.05
	Mid	6,490,436	13,705,948	-7,215,512	20,196,384	1.71
	High	8,701,957	18,892,628	-10,190,671	27,594,585	2.33
Dominica	Low	1,848,053	2,663,399	-815,346	4,511,452	1.22
	Mid	2,784,120	4,382,660	-1,598,540	7,166,780	1.94
	High	3,731,906	5,948,189	-2,216,283	9,680,095	2.62
Grenada	Low	3,906,168	5,796,601	-1,890,433	9,702,769	1.41
	Mid	5,777,947	9,526,465	-3,748,518	15,304,412	2.22
	High	7,665,225	13,027,007	-5,361,782	20,692,232	3.00
St. Kitts & Nevis	Low	2,856,095	3,820,050	-963,955	6,676,145	1.26
	Mid	4,247,565	6,323,414	-2,075,849	10,570,979	1.99
	High	5,648,168	8,656,347	-3,008,179	14,304,515	2.70
St. Lucia	Low	7,004,405	11,513,678	-4,509,273	18,518,083	1.48
	Mid	10,516,491	19,160,671	-8,644,180	29,677,162	2.37
	High	14,071,922	26,160,711	-12,088,789	40,232,633	3.21
St. Vincent & Grenadines	Low	1,948,186	3,083,686	-1,135,500	5,031,872	3.67
	Mid	2,902,366	5,103,736	-2,201,370	8,006,102	5.84
	High	3,867,475	6,945,949	-3,078,474	10,813,424	7.89
OECS Total	Low	21,869,730	34,986,348	-13,116,618	56,856,078	-
	Mid	32,718,925	58,202,894	-25,483,969	90,921,819	-
	High	43,686,653	79,630,831	-35,944,178	123,317,484	-
OECS Average	Low	3,644,955	5,831,058	-2,186,103	9,476,013	1.68
	Mid	5,453,154	9,700,482	-4,247,328	15,153,637	2.68
	High	7,281,109	13,271,805	-5,990,696	20,552,914	3.63

Table 4-8. Trade effects from tariff elimination on EU, Caribbean and NAFTA imports

		Trade creation (TC) in XC\$	Trade diversion (TD) in XC\$	TC-TD in XC\$	Total trade effects in XC\$	Trade effects as percent of total imports
Antigua & Barbuda	Low	34,494,905	11,077,924	23,416,981	45,572,829	3.85
	Mid	51,615,149	18,009,669	33,605,480	69,624,818	5.89
	High	68,938,725	24,213,728	44,724,997	93,152,453	7.88
Dominica	Low	8,877,337	3,833,801	5,043,536	12,711,138	3.44
	Mid	13,000,776	6,164,933	6,835,843	19,165,709	5.19
	High	17,161,905	8,240,110	8,921,795	25,402,015	6.88
Grenada	Low	17,862,102	7,814,051	10,048,051	25,676,153	3.72
	Mid	26,067,437	12,630,729	13,436,708	38,698,166	5.61
	High	34,340,291	16,918,389	17,421,902	51,258,680	7.43
St. Kitts & Nevis	Low	15,598,288	4,219,043	11,379,245	19,817,331	3.74
	Mid	22,833,737	6,926,946	15,906,791	29,760,683	5.61
	High	30,129,000	9,978,383	20,150,617	40,107,383	7.56
St. Lucia	Low	33,704,409	16,474,309	17,230,100	50,178,718	4.01
	Mid	49,520,886	26,512,840	23,008,046	76,033,726	6.07
	High	65,490,204	35,397,593	30,092,611	100,887,797	8.06
St. Vincent & Grenadines	Low	6,605,892	3,560,052	3,045,840	10,165,944	7.42
	Mid	9,686,443	5,769,457	3,916,986	15,455,900	11.28
	High	12,796,060	7,743,627	5,052,433	20,539,687	14.99
OECS Total	Low	117,142,933	46,979,180	70,163,753	164,122,113	-
	Mid	172,724,428	76,014,574	96,709,854	248,739,002	-
	High	228,856,185	102,491,830	126,364,355	331,348,015	-
OECS Average	Low	19,523,822	7,829,863	11,693,959	27,353,686	4.36
	Mid	28,787,405	12,669,096	16,118,309	41,456,500	6.61
	High	38,142,698	17,081,972	21,060,726	55,224,669	8.80

Table 4-9. Trade effects from tariff elimination on EU plus FTAA imports

		Trade creation (TC) in XC\$	Trade diversion (TD) in XC\$	TC-TD in XCS	Total trade effects in XC\$	Trade effects as percent of total imports
Antigua & Barbuda	Low	36,161,956	8,000,766	28,161,190	44,162,722	3.73
	Mid	53,995,383	12,983,086	41,012,297	66,978,469	5.66
	High	72,036,049	17,983,086	54,052,963	90,019,135	7.61
Dominica	Low	9,615,325	3,137,234	6,478,091	12,752,559	3.45
	Mid	14,070,248	5,026,595	9,043,653	19,096,843	5.17
	High	18,564,165	6,695,614	11,868,551	25,259,779	6.84
Grenada	Low	19,021,129	7,034,696	11,986,433	26,055,825	3.77
	Mid	27,760,724	11,337,491	16,423,233	39,098,215	5.66
	High	36,572,670	15,155,696	21,416,974	51,728,366	7.49
St. Kitts & Nevis	Low	16,137,950	3,537,935	12,600,015	19,675,885	3.71
	Mid	23,601,736	5,651,849	17,949,887	29,253,585	5.52
	High	31,126,555	7,507,563	23,618,992	38,634,118	7.29
St. Lucia	Low	36,357,031	13,410,297	22,946,734	49,767,328	3.98
	Mid	53,354,654	21,409,318	31,945,336	74,763,972	5.97
	High	70,514,075	28,427,537	42,086,538	98,941,612	7.90
St. Vincent & Grenadines	Low	10,040,486	2,434,352	7,606,134	12,474,838	9.10
	Mid	14,638,712	3,907,615	10,731,097	18,546,327	13.53
	High	19,276,817	5,212,313	14,064,504	24,489,130	17.87
OECS Total	Low	127,333,877	37,555,280	89,778,597	164,889,157	-
	Mid	187,421,457	60,315,954	127,105,503	247,737,411	-
	High	248,090,331	80,981,809	167,108,522	329,072,140	-
OECS Average	Low	21,222,313	6,259,213	14,963,100	27,481,526	4.62
	Mid	31,236,910	10,052,659	21,184,251	41,289,569	6.92
	High	41,348,389	13,496,968	27,851,420	54,845,357	9.17

Table 4-10. Summary of trade effects as percent of total imports according to liberalization scenario

		EU Scenario	EU+ Caribbean scenario	EU+Caribbean +NAFTA scenario	EU plus FTAA scenario
Antigua & Barbuda	Low	0.87	1.05	3.85	3.73
	Mid	1.46	1.71	5.89	5.66
	High	2.02	2.33	7.88	7.61
Dominica	Low	1.01	1.22	3.44	3.45
	Mid	1.65	1.94	5.19	5.17
	High	2.25	2.62	6.88	6.84
Grenada	Low	1.24	1.41	3.72	3.77
	Mid	1.98	2.22	5.61	5.66
	High	2.68	3.00	7.43	7.49
St. Kitts & Nevis	Low	0.87	1.26	3.74	3.71
	Mid	1.40	1.99	5.61	5.52
	High	1.90	2.70	7.56	7.29
St. Lucia	Low	1.46	1.48	4.01	3.98
	Mid	2.39	2.37	6.07	5.97
	High	3.28	3.21	8.06	7.90
St. Vincent & Grenadines	Low	3.08	3.67	7.42	9.10
	Mid	4.93	5.84	11.28	13.53
	High	6.68	7.89	14.99	17.87
OECS Average	Low	1.42	1.68	4.36	4.62
	Mid	2.30	2.68	6.61	6.92
	High	3.13	3.63	8.80	9.17

Table 4-11. Tariff revenue effects from tariff elimination on EU imports

		Change in import duties in XCS	Change in import duties as percent of total baseline import duties	Change in import duties as percent of total trade taxes	Change in import duties as percent of total gov't revenue	Change as percent of GDP
Antigua & Barbuda	Low	-6,512,842	-9.07	-2.82	-1.39	-0.30
	Mid	-7,223,546	-10.05	-3.13	-1.54	-0.33
	High	-7,894,973	-10.99	-3.42	-1.69	-0.36
	Avg.	-7,210,454	-10.04	-3.12	-1.54	-0.33
Dominica	Low	-2,871,187	-14.27	-3.29	-1.36	-0.40
	Mid	-3,111,239	-15.46	-3.57	-1.48	-0.43
	High	-3,337,761	-16.58	-3.83	-1.58	-0.46
	Avg.	-3,106,729	-15.44	-3.56	-1.48	-0.43
Grenada	Low	-5,158,358	-14.32	-3.37	-1.57	-0.44
	Mid	-5,630,696	-15.63	-3.68	-1.71	-0.49
	High	-6,065,978	-16.84	-3.96	-1.85	-0.52
	Avg.	-5,618,344	-15.60	-3.67	-1.71	-0.48
St. Kitts & Nevis	Low	-2,955,884	-9.35	-2.97	-0.97	-0.29
	Mid	-3,306,706	-10.46	-3.32	-1.08	-0.33
	High	-3,626,601	-11.47	-3.64	-1.19	-0.36
	Avg.	-3,296,397	-10.43	-3.31	-1.08	-0.33
St. Lucia	Low	-14,412,825	-19.15	-6.08	-2.98	-0.75
	Mid	-15,877,030	-21.10	-6.70	-3.28	-0.82
	High	-17,251,815	-22.93	-7.28	-3.57	-0.89
	Avg.	-15,847,223	-21.06	-6.69	-3.28	-0.82
St. Vincent & Grenadines	Low	-3,260,861	-17.61	-5.64	-1.05	-0.32
	Mid	-3,600,408	-19.44	-6.23	-1.16	-0.35
	High	-3,912,004	-21.12	-6.76	-1.26	-0.38
	Avg.	-3,591,091	-19.39	-6.21	-1.16	-0.35
OECS Average	Low	-5,861,993	-13.96	-4.03	-1.55	-0.42
	Mid	-6,458,271	-15.36	-4.44	-1.71	-0.46
	High	-7,014,855	-16.66	-4.82	-1.85	-0.50
	Avg.	-6,445,040	-15.32	-4.43	-1.71	-0.46
OECS Total	Low	-35,171,957				
	Mid	-38,749,625				
	High	-42,089,132				
	Avg.	-38,670,238				

Table 4-12. Total trade tax revenues inclusive of total trade counterbalance effects from tariff elimination on EU imports

		Change in import duties in XCS	Counterbalancing change in other border taxes	Total revenue effect	Change as percent of total trade tax	Change as percent of total gov't revenue
Antigua & Barbuda	Low	-6,512,842	-972,612	-7,485,454	-3.24	-1.60
	Mid	-7,223,546	-1,764,223	-8,987,769	-3.89	-1.92
	High	-7,894,973	-2,461,275	-10,356,248	-4.48	-2.21
	Avg.	-7,210,454	-1,732,703	-8,943,157	-3.87	-1.91
Dominica	Low	-2,871,187	-235,380	-3,106,567	-3.56	-1.48
	Mid	-3,111,239	-412,409	-3,523,648	-4.04	-1.67
	High	-3,337,761	-564,100	-3,901,861	-4.47	-1.85
	Avg.	-3,106,729	-403,963	-3,510,692	-4.03	-1.67
Grenada	Low	-5,158,358	-683,378	-5,841,736	-3.81	-1.78
	Mid	-5,630,696	-1,241,388	-6,872,084	-4.49	-2.09
	High	-6,065,978	-1,719,276	-7,785,254	-5.08	-2.37
	Avg.	-5,618,344	-1,214,681	-6,833,025	-4.46	-2.08
St. Kitts & Nevis	Low	-2,955,884	-480,706	-3,436,590	-3.45	-1.12
	Mid	-3,306,706	-812,715	-4,119,421	-4.14	-1.35
	High	-3,626,601	-1,105,034	-4,731,635	-4.75	-1.55
	Avg.	-3,296,397	-799,485	-4,095,882	-4.11	-1.34
St. Lucia	Low	-14,412,825	-1,032,587	-15,445,412	-6.52	-3.19
	Mid	-15,877,030	-1,920,986	-17,798,016	-7.51	-3.68
	High	-17,251,815	-2,697,157	-19,948,972	-8.42	-4.12
	Avg.	-15,847,223	-1,883,577	-17,730,800	-7.48	-3.67
St. Vincent & Grenadines	Low	-3,260,861	-295,952	-3,556,813	-6.15	-1.14
	Mid	-3,600,408	-571,054	-4,171,462	-7.21	-1.34
	High	-3,912,004	-800,607	-4,712,611	-8.15	-1.52
	Avg.	-3,591,091	-555,871	-4,146,962	-7.17	-1.33
OECS Average	Low	-5,861,993	-616,769	-6,478,762	-4.46	-1.72
	Mid	-6,458,271	-1,120,463	-7,578,733	-5.21	-2.01
	High	-7,014,855	-1,557,908	-8,572,764	-5.89	-2.27
	Avg.	-6,445,040	-1,098,380	-7,543,420	-5.19	-2.00
OECS Total	Low	-35,171,957	-3,700,615	-38,872,572		
	Mid	-38,749,625	-6,722,775	-45,472,400		
	High	-42,089,132	-9,347,449	-51,436,581		
	Avg.	-38,670,238	-6,590,280	-45,260,518		

Table 4-13. Tariff revenue effects from tariff elimination on EU and Caribbean imports

		Change in import duties in XC\$	Change in import duties as percent of total baseline import duties	Change in import duties as percent of total trade taxes	Change in import duties as percent of total gov't revenue	Change as percent of GDP
Antigua & Barbuda	Low	-8,637,243	-12.02	-3.74	-1.84	-0.39
	Mid	-9,530,418	-13.27	-4.13	-2.04	-0.43
	High	-10,364,356	-14.43	-4.49	-2.21	-0.47
	Avg.	-9,510,672	-13.24	-4.12	-2.03	-0.43
Dominica	Low	-3,650,679	-18.14	-4.19	-1.73	-0.51
	Mid	-3,930,487	-19.53	-4.51	-1.87	-0.55
	High	-4,188,856	-20.81	-4.80	-1.99	-0.58
	Avg.	-3,923,341	-19.49	-4.50	-1.86	-0.55
Grenada	Low	-6,902,295	-19.16	-4.51	-2.10	-0.60
	Mid	-7,378,435	-20.48	-4.82	-2.25	-0.64
	High	-7,810,288	-21.68	-5.10	-2.38	-0.67
	Avg.	-7,363,673	-20.44	-4.81	-2.24	-0.64
St. Kitts & Nevis	Low	-5,292,549	-16.74	-5.32	-1.73	-0.53
	Mid	-5,752,403	-18.20	-5.78	-1.88	-0.57
	High	-6,179,320	-19.55	-6.21	-2.02	-0.61
	Avg.	-5,741,424	-18.16	-5.77	-1.88	-0.57
St. Lucia	Low	-15,877,403	-21.10	-6.70	-3.28	-0.82
	Mid	-17,414,091	-23.14	-7.35	-3.60	-0.90
	High	-18,834,142	-25.03	-7.95	-3.89	-0.98
	Avg.	-17,375,212	-23.09	-7.33	-3.59	-0.90
St. Vincent & Grenadines	Low	-3,927,314	-21.20	-6.79	-1.26	-0.38
	Mid	-4,317,819	-23.31	-7.47	-1.39	-0.42
	High	-4,674,682	-25.24	-8.08	-1.50	-0.45
	Avg.	-4,306,605	-23.25	-7.45	-1.39	-0.42
OECS Average	Low	-7,381,247	-18.06	-5.21	-1.99	-0.54
	Mid	-8,053,942	-19.65	-5.67	-2.17	-0.58
	High	-8,675,274	-21.12	-6.11	-2.33	-0.63
	Avg.	-8,036,821	-19.61	-5.66	-2.17	-0.58
OECS Total	Low	-44,287,483				
	Mid	-48,323,653				
	High	-52,051,644				
	Avg.	-48,220,927				

Table 4-14. Total trade tax revenues inclusive of total trade counterbalance effects from tariff elimination on EU and Caribbean imports

		Change in import duties in XC\$	Counterbalancing change in other border taxes	Total revenue effect	Change as percent of total trade tax	Change as percent of total gov't revenue
Antigua & Barbuda	Low	-8,637,243	-1,053,199	-9,690,442	-4.20	-2.07
	Mid	-9,530,418	-1,973,908	-11,504,326	-4.98	-2.46
	High	-10,364,356	-2,764,999	-13,129,355	-5.69	-2.80
	Avg.	-9,510,672	-1,930,702	-11,441,374	-4.95	-2.44
Dominica	Low	-3,650,679	-155,487	-3,806,166	-4.36	-1.81
	Mid	-3,930,487	-319,509	-4,249,996	-4.87	-2.02
	High	-4,188,856	-447,874	-4,636,730	-5.32	-2.20
	Avg.	-3,923,341	-307,623	-4,230,964	-4.85	-2.01
Grenada	Low	-6,902,295	-488,596	-7,390,891	-4.82	-2.25
	Mid	-7,378,435	-960,027	-8,338,462	-5.44	-2.54
	High	-7,810,288	-1,365,016	-9,175,304	-5.99	-2.79
	Avg.	-7,363,673	-937,880	-8,301,552	-5.42	-2.53
St. Kitts & Nevis	Low	-5,292,549	-120,098	-5,412,647	-5.44	-1.77
	Mid	-5,752,403	-521,447	-6,273,850	-6.30	-2.05
	High	-6,179,320	-656,384	-6,835,704	-6.87	-2.24
	Avg.	-5,741,424	-432,643	-6,174,067	-6.20	-2.02
St. Lucia	Low	-15,877,403	-870,692	-16,748,095	-7.07	-3.46
	Mid	-17,414,091	-1,680,234	-19,094,325	-8.06	-3.95
	High	-18,834,142	-2,356,621	-21,190,763	-8.94	-4.38
	Avg.	-17,375,212	-1,635,849	-19,011,061	-8.02	-3.93
St. Vincent & Grenadines	Low	-3,927,314	-332,748	-4,260,062	-7.37	-1.37
	Mid	-4,317,819	-642,563	-4,960,382	-8.58	-1.60
	High	-4,674,682	-896,587	-5,571,269	-9.63	-1.79
	Avg.	-4,306,605	-623,966	-4,930,571	-8.53	-1.59
OECS Average	Low	-7,381,247	-503,470	-7,884,717	-5.54	-2.12
	Mid	-8,053,942	-1,016,281	-9,070,224	-6.37	-2.43
	High	-8,675,274	-1,414,580	-10,089,854	-7.07	-2.70
	Avg.	-8,036,821	-978,111	-9,014,932	-6.33	-2.42
OECS Total	Low	-44,287,483	-3,020,820	-47,308,303		
	Mid	-48,323,653	-6,097,688	-54,421,341		
	High	-52,051,644	-8,487,481	-60,539,125		
	Avg.	-48,220,927	-5,868,663	-54,089,590		

Table 4-15. Tariff revenue effects from tariff elimination on EU, Caribbean, and NAFTA imports

		Change in import duties in XC\$	Change in import duties as percent of total baseline import duties	Change in import duties as percent of total trade taxes	Change in import duties as percent of total gov't revenue	Change as percent of GDP
Antigua & Barbuda	Low	-60,011,882	-83.53	-25.99	-12.82	-2.73
	Mid	-61,200,618	-85.19	-26.50	-13.07	-2.78
	High	-62,265,778	-86.67	-26.97	-13.30	-2.83
	Avg.	-61,159,426	-85.13	-26.49	-13.06	-2.78
Dominica	Low	-14,505,735	-72.07	-16.63	-6.89	-2.02
	Mid	-14,879,855	-73.93	-17.06	-7.07	-2.07
	High	-15,215,594	-75.60	-17.45	-7.22	-2.12
	Avg.	-14,867,061	-73.87	-17.05	-7.06	-2.07
Grenada	Low	-28,629,907	-79.48	-18.69	-8.71	-2.47
	Mid	-29,369,622	-81.53	-19.17	-8.94	-2.53
	High	-30,031,452	-83.37	-19.60	-9.14	-2.59
	Avg.	-29,343,660	-81.46	-19.15	-8.93	-2.53
St. Kitts & Nevis	Low	-25,472,431	-80.57	-25.59	-8.33	-2.53
	Mid	-26,192,819	-82.85	-26.31	-8.57	-2.60
	High	-27,010,657	-85.44	-27.13	-8.84	-2.68
	Avg.	-26,225,302	-82.96	-26.34	-8.58	-2.60
St. Lucia	Low	-58,488,086	-77.73	-24.69	-12.09	-3.03
	Mid	-60,366,765	-80.22	-25.48	-12.48	-3.13
	High	-62,032,931	-82.44	-26.18	-12.83	-3.22
	Avg.	-60,295,927	-80.13	-25.45	-12.47	-3.13
St. Vincent & Grenadines	Low	-15,304,025	-82.63	-26.47	-4.93	-1.48
	Mid	-15,714,544	-84.85	-27.18	-5.06	-1.52
	High	-16,077,825	-86.81	-27.80	-5.17	-1.56
	Avg.	-15,698,798	-84.76	-27.15	-5.05	-1.52
OECS Average	Low	-33,735,344	-79.34	-23.01	-8.96	-2.38
	Mid	-34,620,704	-81.43	-23.62	-9.20	-2.44
	High	-35,439,040	-83.39	-24.19	-9.42	-2.50
	Avg.	-34,598,363	-81.38	-23.60	-9.19	-2.44
OECS Total	Low	-202,412,066				
	Mid	-207,724,223				
	High	-212,634,237				
	Avg.	-207,590,175				

Table 4-16. Total trade tax revenues inclusive of total trade counterbalance effects from tariff elimination on EU, Caribbean and NAFTA imports

		Change in import duties in XC\$	Counterbalancing change in other border taxes	Total revenue effect	Change as percent of total trade tax	Change as percent of total gov't revenue
Antigua & Barbuda	Low	-60,011,882	5,624,472	-54,387,410	-23.55	-11.62
	Mid	-61,200,618	7,778,971	-53,421,647	-23.14	-11.41
	High	-62,265,778	10,180,916	-52,084,862	-22.56	-11.12
	Avg.	-61,159,426	7,861,453	-53,297,973	-23.08	-11.38
Dominica	Low	-14,505,735	1,092,998	-13,412,737	-15.38	-6.37
	Mid	-14,879,855	1,524,985	-13,354,870	-15.31	-6.34
	High	-15,215,594	2,014,801	-13,200,793	-15.14	-6.27
	Avg.	-14,867,061	1,544,261	-13,322,800	-15.28	-6.33
Grenada	Low	-28,629,907	2,284,864	-26,345,043	-17.20	-8.02
	Mid	-29,369,622	3,029,139	-26,340,483	-17.19	-8.02
	High	-30,031,452	3,913,972	-26,117,480	-17.05	-7.95
	Avg.	-29,343,660	3,075,992	-26,267,669	-17.15	-7.99
St. Kitts & Nevis	Low	-25,472,431	2,552,641	-22,919,790	-23.02	-7.50
	Mid	-26,192,819	3,563,863	-22,628,956	-22.73	-7.40
	High	-27,010,657	4,556,940	-22,453,717	-22.55	-7.35
	Avg.	-26,225,302	3,557,815	-22,667,488	-22.77	-7.42
St. Lucia	Low	-58,488,086	3,102,185	-55,385,901	-23.38	-11.45
	Mid	-60,366,765	4,146,016	-56,220,749	-23.73	-11.62
	High	-62,032,931	5,425,804	-56,607,127	-23.89	-11.70
	Avg.	-60,295,927	4,224,668	-56,071,259	-23.67	-11.59
St. Vincent & Grenadines	Low	-15,304,025	1,495,461	-13,808,564	-23.88	-4.44
	Mid	-15,714,544	2,020,932	-13,693,612	-23.68	-4.41
	High	-16,077,825	2,630,914	-13,446,911	-23.25	-4.33
	Avg.	-15,698,798	2,049,102	-13,649,696	-23.60	-4.39
OECS Average	Low	-33,735,344	2,692,104	-31,043,241	-21.07	-8.23
	Mid	-34,620,704	3,677,318	-30,943,386	-20.96	-8.20
	High	-35,439,040	4,787,225	-30,651,815	-20.74	-8.12
	Avg.	-34,598,363	3,718,882	-30,879,481	-20.92	-8.18
OECS Total	Low	-202,412,066	16,152,621	-186,259,445		
	Mid	-207,724,223	22,063,906	-185,660,317		
	High	-212,634,237	28,723,347	-183,910,890		
	Avg.	-207,590,175	22,313,291	-185,276,884		

Table 4-17. Tariff revenue effects from tariff elimination on EU plus FTAA imports

		Change in import duties in XC\$	Change in import duties as percent of total baseline import duties	Change in import duties as percent of total trade taxes	Change in import duties as percent of total gov't revenue	Change as percent of GDP
Antigua & Barbuda	Low	-62,067,633	-86.39	-26.88	-13.26	-2.82
	Mid	-63,018,961	-87.72	-27.29	-13.46	-2.86
	High	-63,868,937	-88.90	-27.66	-13.64	-2.90
	Avg.	-62,985,177	-87.67	-27.28	-13.45	-2.86
Dominica	Low	-15,505,279	-77.04	-17.78	-7.36	-2.16
	Mid	-15,823,615	-78.62	-18.14	-7.51	-2.20
	High	-16,107,285	-80.03	-18.47	-7.65	-2.24
	Avg.	-15,812,060	-78.56	-18.13	-7.51	-2.20
Grenada	Low	-30,238,334	-83.94	-19.74	-9.20	-2.61
	Mid	-30,851,265	-85.64	-20.14	-9.39	-2.66
	High	-31,392,047	-87.14	-20.49	-9.55	-2.71
	Avg.	-30,827,215	-85.58	-20.12	-9.38	-2.66
St. Kitts & Nevis	Low	-26,302,954	-83.20	-26.42	-8.61	-2.61
	Mid	-26,881,371	-85.03	-27.00	-8.80	-2.67
	High	-27,386,858	-86.63	-27.51	-8.96	-2.72
	Avg.	-26,857,061	-84.95	-26.98	-8.79	-2.67
St. Lucia	Low	-62,042,368	-82.45	-26.19	-12.83	-3.22
	Mid	-63,596,141	-84.52	-26.84	-13.15	-3.30
	High	-64,957,616	-86.32	-27.42	-13.43	-3.37
	Avg.	-63,532,042	-84.43	-26.82	-13.14	-3.29
St. Vincent & Grenadines	Low	-16,730,725	-90.33	-28.93	-5.38	-1.62
	Mid	-17,029,748	-91.95	-29.45	-5.48	-1.65
	High	-17,293,995	-93.37	-29.91	-5.57	-1.68
	Avg.	-17,018,156	-91.89	-29.43	-5.48	-1.65
OECS Average	Low	-35,481,216	-83.89	-24.32	-9.44	-2.51
	Mid	-36,200,184	-85.58	-24.81	-9.63	-2.56
	High	-36,834,456	-87.07	-25.24	-9.80	-2.60
	Avg.	-36,171,952	-85.51	-24.79	-9.62	-2.55
OECS Total	Low	-212,887,293				
	Mid	-217,201,101				
	High	-221,006,738				
	Avg.	-217,031,711				

Table 4-18. Total trade tax revenues inclusive of total trade counterbalance effects from tariff elimination on EU plus FTAA imports

		Change in import duties in XC\$	Counterbalancing change in other border taxes	Total revenue effect	Change as percent of total trade tax	Change as percent of total gov't revenue
Antigua & Barbuda	Low	-62,067,633	6,839,960	-55,227,673	-23.92	-11.80
	Mid	-63,018,961	9,676,719	-53,342,242	-23.10	-11.39
	High	-63,868,937	12,702,592	-51,166,345	-22.16	-10.93
	Avg.	-62,985,177	9,739,757	-53,245,420	-23.06	-11.37
Dominica	Low	-15,505,279	1,439,423	-14,065,856	-16.13	-6.68
	Mid	-15,823,615	2,061,930	-13,761,685	-15.78	-6.53
	High	-16,107,285	2,735,339	-13,371,946	-15.33	-6.35
	Avg.	-15,812,060	2,078,897	-13,733,162	-15.75	-6.52
Grenada	Low	-30,238,334	2,696,993	-27,541,341	-17.98	-8.38
	Mid	-30,851,265	3,673,060	-27,178,205	-17.74	-8.27
	High	-31,392,047	4,777,827	-26,614,220	-17.37	-8.10
	Avg.	-30,827,215	3,715,960	-27,111,255	-17.70	-8.25
St. Kitts & Nevis	Low	-26,302,954	2,783,619	-23,519,335	-23.62	-7.70
	Mid	-26,881,371	3,967,597	-22,913,774	-23.02	-7.50
	High	-27,386,858	5,270,725	-22,116,133	-22.21	-7.24
	Avg.	-26,857,061	4,007,314	-22,849,747	-22.95	-7.48
St. Lucia	Low	-62,042,368	4,094,855	-57,947,513	-24.46	-11.98
	Mid	-63,596,141	5,731,988	-57,864,153	-24.43	-11.96
	High	-64,957,616	7,570,973	-57,386,643	-24.22	-11.86
	Avg.	-63,532,042	5,799,272	-57,732,770	-24.37	-11.94
St. Vincent & Grenadines	Low	-16,730,725	2,158,833	-14,571,892	-25.20	-4.69
	Mid	-17,029,748	3,029,672	-14,000,076	-24.21	-4.51
	High	-17,293,995	3,960,756	-13,333,239	-23.06	-4.29
	Avg.	-17,018,156	3,049,754	-13,968,402	-24.16	-4.50
OECS Average	Low	-35,481,216	3,335,614	-32,145,602	-21.88	-8.54
	Mid	-36,200,184	4,690,161	-31,510,023	-21.38	-8.36
	High	-36,834,456	6,169,702	-30,664,754	-20.73	-8.13
	Avg.	-36,171,952	4,731,826	-31,440,126	-21.33	-8.34
OECS Total	Low	-212,887,293	20,013,683	-192,873,610		
	Mid	-217,201,101	28,140,966	-189,060,135		
	High	-221,006,738	37,018,212	-183,988,526		
	Avg.	-217,031,711	28,390,954	-188,640,757		

Table 4-19. Change in tariff revenue as a percentage of total government revenue and change in tariff revenue as percentage of total government revenue inclusive of counterbalancing effects according to liberalization scenario

	EU scenario	EU scenario tax offset	EU+ Carib. scenario	EU + Carib. scenario tax offset	EU+ Carib. +NAFTA scenario	EU+ Carib. +NAFTA scenario tax offset	EU+ FTAA scenario	EU+ FTAA scenario tax offset
Antigua & Barbuda								
Low	-1.39	-1.60	-1.84	-2.07	-12.82	-11.62	-13.26	-11.80
Mid	-1.54	-1.92	-2.04	-2.46	-13.07	-11.41	-13.46	-11.39
High	-1.69	-2.21	-2.21	-2.80	-13.30	-11.12	-13.64	-10.93
Avg.	-1.54	-1.91	-2.03	-2.44	-13.06	-11.38	-13.45	-11.37
Dominica								
Low	-1.36	-1.48	-1.73	-1.81	-6.89	-6.37	-7.36	-6.68
Mid	-1.48	-1.67	-1.87	-2.02	-7.07	-6.34	-7.51	-6.53
High	-1.58	-1.85	-1.99	-2.20	-7.22	-6.27	-7.65	-6.35
Avg.	-1.48	-1.67	-1.86	-2.01	-7.06	-6.33	-7.51	-6.52
Grenada								
Low	-1.57	-1.78	-2.10	-2.25	-8.71	-8.02	-9.20	-8.38
Mid	-1.71	-2.09	-2.25	-2.54	-8.94	-8.02	-9.39	-8.27
High	-1.85	-2.37	-2.38	-2.79	-9.14	-7.95	-9.55	-8.10
Avg.	-1.71	-2.08	-2.24	-2.53	-8.93	-7.99	-9.38	-8.25
St. Kitts & Nevis								
Low	-0.97	-1.12	-1.73	-1.77	-8.33	-7.50	-8.61	-7.70
Mid	-1.08	-1.35	-1.88	-2.05	-8.57	-7.40	-8.80	-7.50
High	-1.19	-1.55	-2.02	-2.24	-8.84	-7.35	-8.96	-7.24
Avg.	-1.08	-1.34	-1.88	-2.02	-8.58	-7.42	-8.79	-7.48
St. Lucia								
Low	-2.98	-3.19	-3.28	-3.46	-12.09	-11.45	-12.83	-11.98
Mid	-3.28	-3.68	-3.60	-3.95	-12.48	-11.62	-13.15	-11.96
High	-3.57	-4.12	-3.89	-4.38	-12.83	-11.70	-13.43	-11.86
Avg.	-3.28	-3.67	-3.59	-3.93	-12.47	-11.59	-13.14	-11.94
St. Vincent								
Low	-1.05	-1.14	-1.26	-1.37	-4.93	-4.44	-5.38	-4.69
Mid	-1.16	-1.34	-1.39	-1.60	-5.06	-4.41	-5.48	-4.51
High	-1.26	-1.52	-1.50	-1.79	-5.17	-4.33	-5.57	-4.29
Avg.	-1.16	-1.33	-1.39	-1.59	-5.05	-4.39	-5.48	-4.50
OECS Average								
Low	-1.55	-1.72	-1.99	-2.12	-8.96	-8.23	-9.44	-8.54
Mid	-1.71	-2.01	-2.17	-2.43	-9.20	-8.20	-9.63	-8.36
High	-1.85	-2.27	-2.33	-2.70	-9.42	-8.12	-9.80	-8.13
Avg.	-1.71	-2.00	-2.17	-2.42	-9.19	-8.18	-9.62	-8.34

CHAPTER 5 SUMMARY AND CONCLUSIONS

Summary

The primary objective of this study was to estimate and evaluate the trade and fiscal effects of alternative trade liberalization scenarios for the members of the Organization of Eastern Caribbean States using highly disaggregated trade data. This evaluation comes at a time when the OECS faces the prospect of joining an Economic Partnership Agreement with the European Union, which is intended to replace the existing non-reciprocal trade preference regime. This situation poses significant challenges and concerns for the OECS.

In this situation, not only was it timely to evaluate the likely effects of an agreement with the EU, it was also relevant to evaluate alternatives and their effects. The formation of EPAs and the exclusion of the OECS largest trading partners, namely the United States and other Caribbean nations, can have unwelcome effects as they offer the potential for trade diversion. Hence, joining an EPA with the EU raises important questions. Is it in the interest of the OECS to enter an EPA? How severe are the expected fiscal impacts? How large is the scope for trade diversion from such agreements? Are there other trade liberalization options that would be a better fit with OECS interests? How severe are the fiscal impacts under these alternative options? These questions required empirical analysis.

To adequately address the questions posed, a review of the characteristics and conditions of the OECS was presented. The members of the OECS, although sharing many similarities, are not as homogeneous as one can be led to believe. The snapshots presented of their geographic conditions, economic structure, socioeconomic conditions, as well as their composition and structure of trade, provided the necessary context for the evaluation of alternative trade policy options.

Several broad generalizations emerged from such contextual analysis. The economic performance of the OECS has been gradually deteriorating over time. In terms of growth, these countries suffered a setback at the start of the new millennium relative to the 1980s. They also continued to struggle with poverty, high rates of unemployment and high levels of indebtedness. In addition, a recurrent concern has often focused on their smallness and the vulnerabilities posed by their openness. Imports have continued to be high relative to GDP while exports, although increasing, have experienced a shift toward services as traditional exports that have long benefited from preferences are becoming less significant.

To better understand the issue at hand a brief review of the literature on trade liberalization and economic performance was provided. Traditional trade theory suggests that trade liberalization can lead to substantial economic gains. Economies of scale and terms of trade effects result from larger markets and changes in relative import and export prices. Dynamic effects derived from capital inflows, technology transfers and increased competition, although difficult to quantify, can also be expected and are likely to be beneficial. However, trade and fiscal impacts are the most visible features of trade liberalization and the focus of this study.

The economic effects of trade liberalization have been subject of extensive study. A significant amount of research on the issue has focused on developing countries, particularly the relationship between trade liberalization, economic growth and development. Despite the large number of studies, unambiguous evidence suggesting that trade liberalization will lead to improved economic performance, and hence economic benefits, is not available. However, the literature noted there was unambiguous evidence that closed economies performed poorly.

The evaluation of trade policy and economic integration has usually dealt with the quantification of trade creation and trade diversion. Discussion and an assessment of basic

methods used in empirical analysis of trade and trade policy were also presented. The three methods commonly used in empirical studies are gravity models, computable general equilibrium (CGE) models, and partial equilibrium models. Each of the methods has its limitations and drawbacks. The choice of methodology must consider the specific circumstances of the required analysis due to significant tradeoffs that exist when such selection is made.

A major concern from the perspective of small economies such as the OECS regards the fiscal challenges posed by trade liberalization. Trade-related taxes are a major source of government revenue for countries such as OECS members and their reduction poses questions as to the likely fiscal impacts liberalization may create. It is feared that the loss of such revenue could compromise their ability grow and develop. Hence the adjustment costs posed by trade liberalization might need to be considered. In situations of this type it is common for compensation schemes to be developed where the preference beneficiary, particularly when it is a developed country, dispenses some aid package designed to alleviate these adjustment costs. These packages might include payments to substitute for government revenues derived from import duties while other sources of revenues are created. These issues are often considered in trade negotiation processes.

Conclusions

The partial equilibrium model based on Verdoorn (1960) was used to estimate trade flows and tariff revenue contingent on changes in tariff rates and the specification of alternative trade policy scenarios. The model assumed that: the source of imports for any given product induced imperfect substitution; trade flow changes do not affect incomes or exchange rates; infinite supply elasticities; and iso-elastic import demand functions. Although these are rather restrictive assumptions, they are not unreasonable for this type of analysis, particularly when related to small economies.

The model and variants of it have been used extensively in trade analysis yet, as any model, it has shortcomings. Elasticity values are chosen rather arbitrarily and on the basis of estimates that are often questionable. Hence, the choice of elasticities of import demand and substitution lie at the core of criticism leveled at partial equilibrium trade models. In addition, these models are unable to consider economy-wide changes that result from tariff modifications.

Partial equilibrium models, however, allow for evaluations to be performed at highly disaggregated levels offering the possibility of detailed trade analysis. This level of detail offers precision in identifying specific products and trading partners affected by alternative trade policy scenarios. Hence, the data used in this study were well suited for partial equilibrium analysis.

The results obtained in similar studies by Greenway and Milner (2003) and by Gasiorek et al. (2006),²⁶ who also employed partial equilibrium models to address the impacts of the formation of EPAs in the context of CARICOM, were comparable to those obtained in this dissertation. The work by the former studied the trade and welfare effects of trade liberalization through the formation of an EPA with the EU, liberalization with the EU plus the United States, and full multilateral liberalization. However, Greenway and Milner (2003) employed data at the two-digit level in their analysis. Their results suggested that among the three alternatives, the formation of the EPA with the EU was the least beneficial for those selected members of CARICOM included in their study. The authors concluded that an EPA led to decreased welfare, where welfare was interpreted as trade diversion exceeding trade creation, and that CARICOM members would be in a worse situation if they entered an EPA. Overall, however, the change in total imports as a result of an EPA would be very small, ranging from 1.8% in St. Kitts and Nevis to 3.1% in St. Vincent and the Grenadines.

²⁶ This study contains various aspects in the formation of the EPAs with the EU. Part 6 of this work specifically, is a partial equilibrium model.

Trade liberalization with the EU plus the United States and full multilateral liberalization were better options, with full multilateral liberalization being best. In both such cases, welfare gains were positive. The Greenway and Milner (2003) study also found that changes in total trade under both of these cases would amount to no more than 14.1%, in the most affected country, under full multilateral liberalization. The study considered full removal of border charges and noted that in such case tariff revenue losses would be quite large.

Results from the Gasiorek et al. (2006) study, where six-digit data and alternative liberalization scenarios were employed, reflected comparable results as well. Although results indicated that broadening liberalization yielded improved welfare effects, they actually showed very small but positive trade effects in the formation of an EPA. Tariff losses were substantial when taken alone and smaller when viewed in the context of broader consumption taxes.

The simulations performed in this dissertation provided some surprising insights into the effects of trade liberalization in the OECS. Bearing in mind that import duties account for a fraction of border charges, trade effects that resulted from tariff elimination were not as large as conventional wisdom has suggested. The scenario simulating an EPA suggested that trade liberalization with the EU alone lead to negative net trade creation for all elasticity values. The trade effects as a percent of the baseline imports were small and ranged from 1.4% in the low elasticity case to 3.1% in the high elasticity scenario. In terms of tariff revenue losses, these were again quite small. The change in import duties due to tariff elimination represented a decrease in total government revenues of -1.71% for the group of OECS members. St. Lucia was the most affected country where tariff elimination represented -3.3% of government revenue. Under the EU trade liberalization scenario, however, revenue losses were made worse

by negative net trade creation. For the OECS, trade liberalization with Europe, inclusive of negative counterbalancing effects, led to -2.0% lower government revenues.

The liberalization scenario of the EU plus the larger Caribbean was not very different from that involving the EU alone. This effect was perhaps related to the OECS already having low trade barriers on Caribbean imports despite occasional exemptions. Trade diversion exceeded trade creation for all members of the OECS under this scenario. Trade effects as a percent of baseline imports were small, averaging from 1.7% in the low elasticity case to 3.6% in the high elasticity case. On an individual country basis, trade effects as a percent of total imports were lowest in Antigua and Barbuda and highest in St. Vincent and the Grenadines. Tariff revenue changes were small as well. For the OECS tariff revenue losses averaged -2.2%.

The inclusion of NAFTA to the EU and Caribbean in the third scenario lead to large changes in net trade creation. This was not surprising as the United States and Canada are important trade partners for the OECS. Despite significant increases in trade creation, total trade effects as a percentage of baseline imports remained modest ranging between 4.4% and 8.8% depending on the elasticity value, for the OECS as a group. Only St. Vincent and the Grenadines had more than modest trade effects, which in the high elasticity scenario reach 15.0%.

The tariff revenue effects in this broader liberalization scenario were more severe than in the previous two but they were, nonetheless, relatively moderate. For the OECS as a group, tariff revenue changes, as a percentage of total government revenue, amounted to -9.2%. When counterbalancing effects were taken into consideration, the figure fell to -8.2%. However, when considering tariff revenue changes in terms of total baseline duties and as a percentage of total trade taxes, these changes were significant. These amounted to -81.4% in case of the former and amounted to -23.6% percent in terms of the latter. Due to the broad assortment of border taxes,

it was nonetheless relevant to consider changes in import duties as they relate to total government revenues for a more truthful assessment of the effects.

The EU plus FTAA scenario had minimal differences with the previous situation. This suggested that the inclusion of Latin American countries would not increase trade significantly regardless of tariff elimination. This was perhaps due to limited trade between these countries and the OECS. The importance of NAFTA, particularly trade with the United States, could be a factor in rendering the addition of FTAA members to almost negligible proportions.

The identification of most-affected products under the four alternative trade scenarios was also included in the results. In general terms, products that have the largest trade and tariff revenue effects included electrical and transmission equipment, parts for vehicles and vehicles, medicines, spirits, food products, aerated beverages, transmission apparatus and petroleum products. The lists perhaps suggest that intermediate and tourist industries are targeted for taxation.

In summary, results from the first two scenarios were quite similar. However, when liberalization with the EU alone was considered, the scope for trade diversion was increased. Trade diversion exceeded trade creation in all cases and overall trade effects and fiscal impacts were very small. The inclusion of the larger Caribbean also led to negative net trade creation, yet fiscal and trade impacts remained small. The last two scenarios, where inclusion of NAFTA and an FTAA broadened the scope of trade liberalization, were very similar and resulted in net trade creation. Trade effects were larger, as were the fiscal impacts. In all scenarios considered in this study, trade effects ranged from very small to modest, as did fiscal impacts. These results were consistent with similar studies previously noted.

This dissertation has broadened the analysis presented in the previously noted studies. It has analyzed data at a further level of disaggregation, which allowed for increased precision in the calculations of trade effects. In addition, the assessment of fiscal impacts at the individual tariff line allowed the identification and pinpointing of those lines that are most sensitive to trade effects and those that would have the largest fiscal impacts.

A model like the one employed in this analysis is limited by rather restrictive assumptions. Policy issues require consideration of a broader scope as other social and political factors must be part of policymaking calculations. However, this type of analysis can serve as guidelines in policy decisions. Analysis using data at a highly disaggregated level can be extended to real practical application when in the realm of trade negotiations and can be very useful in helping negotiators set timetables and liberalization phases.

Prevailing conventional wisdom, from political rather than economic perspectives, suggests negative effects from trade liberalization for OECS given their small size and vulnerabilities. The implications are that special considerations should be given to small countries when dealing with trade liberalization issues. The results from this dissertation provide empirical support to a different perspective. These findings should help in assessing the more appropriate course of action for the OECS. They coincide with the theoretical arguments and policy suggestions that broader trade liberalization is better than limited regional trade agreements, particularly for small countries such as the OECS.

While this study addressed the trade and fiscal impacts of trade liberalization using a static framework of analysis, dynamic effects were not even considered. It is likely that dynamic considerations would be relevant and impacts these economies positively, therefore lending additional support for the arguments in favor of broader liberalization. In fact, even if the issue

of trade liberalization is solely framed as a fiscal problem, results from this study suggest the impact on government revenues is modest. When addressing fiscal revenues alternative tax policies might be considered to expand the tax base rather than relying on the more distortionary trade taxes.

Considerations for Further Research

The use of partial equilibrium modeling is only one tool available to study the issue of trade liberalization and its impact on countries such as OECS members. As any type of modeling, it was noted that there exist limitations. Comparisons with partial equilibrium models can be made if the analysis is conducted using the more comprehensive CGE models. This type of research could be pursued with relative ease. In addition, investigations to include other effects and dynamic considerations are an area for further empirical investigation. However, as suggested previously, a factor that hampers both partial and general equilibrium analysis is the lack of estimates for elasticity values to be used in analysis. Although the task of estimating particular elasticities is massive, the undertaking provides fertile ground for future investigations.

APPENDIX A
MOST AFFECTED PRODUCTS BY TRADE AND TARIFF REVENUE EFFECTS

Table A-1. Antigua and Barbuda top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU liberalization 2004

No.	Commodity description	Trade effect value in XC\$	Share	Commodity description	Change in import duty value in XC\$	Share
1	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	610,611	3.55	Aerated beverages in containers paying levy	274,691	3.80
2	Other medicaments (excl. Goods of heading no.30.02,309.05 or 30.06)	575,363	3.34	Brandy, in bottles of a strength not exceeding 46% volume	259,975	3.60
3	Aerated beverages in containers paying levy	56,0328	3.25	New pneumatic tyres of a kind used on motor car (incl. Station wagons)	197,442	2.73
4	Cigarettes containing tobacco	534,074	3.10	Cigarettes containing tobacco	192,093	2.66
5	New pneumatic tyres of a kind used on motor car (incl. Station wagons)	450,388	2.62	Other medicaments (excl. Goods of heading no.30.02,309.05 or 30.06)	182,737	2.53
6	Sweet biscuits	402,603	2.34	Sweet biscuits	178,253	2.47
7	Brandy, in bottles of a strength not exceeding 46% volume	353,836	2.06	Vodka	178,163	2.47
8	Other waters,incl. Mineral/aerated cont. Added sugar in con. Not paying levy	294,999	1.71	Salami sausages	160,931	2.23
9	Other pasta whether or not cooked or stuffed (with meat or other substan.)	288,062	1.67	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	160,435	2.22
10	Liqueurs and cordials	287,744	1.67	Liqueurs and cordials	145,717	2.02
	Total share		25.31	Total share		26.72
	Total trade effects	17,217,428		Total tariff revenue effects	7,223,546	

Table A-2. Antigua and Barbuda top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU and Caribbean liberalization 2004

No.	Commodity description	Trade effect value in XC\$	Share	Commodity description	Change in import duty value in XC\$	Share
1	Transmission apparatus incorp. Reception appara.: portable radio-telephone	1,441,463	7.14	Transmission apparatus incorp. Reception appara.: portable radio-telephone	617,106	6.48
2	New pneumatic tyres of a kind used on motor car (incl. Station wagons	811,844	4.02	New pneumatic tyres of a kind used on motor car (incl. Station wagons	372,305	3.91
3	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	729,407	3.61	Parboiled rice in packages for retail sale	279,494	2.93
4	Other medicaments (excl. Goods of heading no.30.02,309.05 or 30.06)	526,443	2.61	Aerated beverages in containers paying levy	273,146	2.87
5	Parboiled rice in packages for retail sale	422,835	2.09	Brandy, in bottles of a strength not exceeding 46% volume	264,219	2.77
6	Aerated beverages in containers paying levy	380,956	1.89	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	206,747	2.17
7	Brandy, in bottles of a strength not exceeding 46% volume	347,865	1.72	Other medicaments (excl. Goods of heading no.30.02,309.05 or 30.06)	188,273	1.98
8	Sweet biscuits	342,018	1.69	Sweet biscuits	186,955	1.96
9	Other food preparations not elsewhere specified or included	314,761	1.56	Cigarettes containing tobacco	184,737	1.94
10	Cigarettes containing tobacco	288,693	1.43	Vodka	180,823	1.90
	Total share		27.76	Total share		28.89
	Total trade effects	20,196,384		Total tariff revenue effects	9,530,418	

Table A-3. Antigua and Barbuda top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU, Caribbean, and NAFTA liberalization 2004

No	Commodity description	Trade effect value in XC\$	Share	Commodity description	Change in import duty value in XC\$	Share
1	Other parts & accessories of the motor vehicles of headings # 87.01 -87.05	1,277,846	1.84	Other food preparations not elsewhere specified or included	1,365,521	2.23
2	New pneumatic tyres of a kind used on motor car (incl. Station wagons)	1,276,550	1.83	Aerated beverages in containers paying levy	965,179	1.58
3	Other veh. For transport of persons, used, exceeding 4 years	1,225,001	1.76	Transmission apparatus incorp. Reception appara.: portable radio-telephone	947,749	1.55
4	Other food preparations not elsewhere specified or included	1,047,787	1.50	Other parts & accessories of the motor vehicles of headings # 87.01 -87.05	939,874	1.54
5	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	995,704	1.43	Fresh grapes	716,569	1.17
6	Transmission apparatus incorp. Reception appara.: portable radio-telephone	967,904	1.39	New pneumatic tyres of a kind used on motor car (incl. Station wagons)	704,641	1.15
7	Other plywood	926,097	1.33	Other boneless meat of bovine animals frozen	699,003	1.14
8	Other spark ignition vehicles, new	878,395	1.26	Other waters,incl. Mineral/aerated cont. Added sugar in con. Not paying levy	621,666	1.02
9	Other foot-ware	847,034	1.22	Other meat of swine fresh, frozen	618,395	1.01
10	Other other articles of plastics/articles of other materials heading 39.01	644,029	0.92	Other veh. For transport of persons, used, exceeding 4 years	557,138	0.91
	Total share		14.49	Total share		13.29
	Total trade effects	69,624,818		Total tariff revenue effects	61,200,618	

Table A-4. Antigua and Barbuda top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU and FTAA liberalization 2004

No.	Commodity description	Trade effect value in XC\$	Share	Commodity description	Change in import duty value in XC\$	Share
1	New pneumatic tyres of a kind used on motor car (incl. Station wagons)	1,276,550	1.91	Other food preparations not elsewhere specified or included	1,373,712	2.18
2	Other parts & accessories of the motor vehicles of headings # 87.01 -87.05	1,268,342	1.89	Aerated beverages in containers paying levy	965,179	1.53
3	Other veh. For transport of persons, used, exceeding 4 years	1,225,001	1.83	Transmission apparatus incorp. Reception appara.: portable radio-telephone	947,749	1.50
4	Other food preparations not elsewhere specified or included	1,026,003	1.53	Other parts & accessories of the motor vehicles of headings # 87.01 -87.05	945,770	1.50
5	Transmission apparatus incorp. Reception appara.: portable radio-telephone	967,904	1.45	Fresh grapes	716,569	1.14
6	Other spark ignition vehicles, new other plywood	875,805	1.31	New pneumatic tyres of a kind used on motor car (incl. Station wagons)	704,641	1.12
7	Other plywood	691,574	1.03	Other boneless meat of bovine animals frozen	699,003	1.11
8	Other foot-ware	672,045	1.00	Other waters,incl. Mineral/aerated cont. Added sugar in con. Not paying levy	629,960	1.00
9	Other other articles of plastics/articles of other materials heading 39.01	629,236	0.94	Other meat of swine fresh, frozen	618,553	0.98
10	Aerated beverages in containers paying levy	625,010	0.93	Other sauces and preparations	559,114	0.89
	Total share		13.82	Total share		12.95
	Total trade effects	66,978,469		Total tariff revenue effects	63,018,961	

Table A-5. Dominica top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU liberalization 2004

No.	Commodity description	Trade effect value in XC\$	Share	Commodity description	Change in import duty value in XC\$	Share
1	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	557,435	8.40	Fowl wings frozen	442,622	12.96
2	Fowl wings frozen	441,328	6.65	Beer	189,228	5.54
3	Beer	202,657	3.05	Other whiskies	182,580	5.35
4	Other electrical compression-type, household type refrigerators	122,347	1.84	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	140,998	4.13
5	New pneumatic tyres of a kind used on buses or lorries	109,208	1.65	Brandy, in bottles of a strength not exceeding 46% volume	135,925	3.98
6	Other whiskies	105,562	1.59	Gin and geneva in bottles of a strength not exceeding 46% volume	94,633	2.77
7	Other electric lamps and lighting fittings	102,082	1.54	Other wine in containers holding 2 litres or less	82,071	2.40
8	Cigarettes containing tobacco	98,537	1.48	Other cane or beet sugar in solid form	64,685	1.89
9	Other cheese	96,262	1.45	Sparkling wine	62,812	1.84
10	Other turkeys cuts and offals frozen	93,925	1.42	Other cheese	59,133	1.73
	Total share		29.07	Total share		42.59
	Total trade effects	6,637,249		Total tariff revenue effects	3,415,422	

Table A-6. Dominica top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU and Caribbean liberalization 2004

No.	Commodity description	Trade effect value in XC\$	Share	Commodity description	Change in import duty value in XC\$	Share
1	Transmission apparatus incorp. Reception appara.: portable radio-telephone	1,005,046	11.67	Fowl wings frozen	442,622	9.66
2	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	538,288	6.25	Transmission apparatus incorp. Reception appara.: portable radio-telephone	399,646	8.72
3	Fowl wings frozen	441,328	5.13	Other whiskies	182,580	3.99
4	New pneumatic tyres of a kind used on buses or lorries	296,312	3.44	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	154,645	3.38
5	Other electrical compression-type, household type refrigerators	122,134	1.42	Brandy, in bottles of a strength not exceeding 46% volume	135,925	2.97
6	Wooden furniture of a kind used in the bedroom	118,077	1.37	Other gas oils	113,791	2.48
7	Other other articles of plastics/articles of other materials heading 39.01	112,603	1.31	Beer	110,808	2.42
8	New pneumatic tyres of a kind used on motor car (incl. Station wagons	111,527	1.30	Gin and geneva in bottles of a strength not exceeding 46% volume	92,463	2.02
9	Other whiskies	105,562	1.23	New pneumatic tyres of a kind used on buses or lorries	91,546	2.00
10	Other electric lamps and lighting fittings	98,862	1.15	Other wine in containers holding 2 litres or less	83,194	1.82
	Total share		34.27	Total share		39.45
	Total trade effects	8,608,533		Total tariff revenue effects	4,581,402	

Table A-7. Dominica top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU, Caribbean and NAFTA liberalization 2004

No.	Commodity description	Trade effect value in XC\$	Share	Commodity description	Change in import duty value in XC\$	Share
1	Transmission apparatus incorp. Reception appara.: portable radio-telephone	1,390,009	6.35	Transmission apparatus incorp. Reception appara.: portable radio-telephone	1,396,073	8.39
2	Other cuts and offals of fowls frozen	777,990	3.55	Other cuts and offals of fowls frozen	996,179	5.99
3	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	582,392	2.66	Fowl wings frozen	461,395	2.77
4	Other plywood	528,701	2.41	Other plywood	263,332	1.58
5	New pneumatic tyres of a kind used on buses or lorries	484,860	2.21	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	259,144	1.56
6	Other parts & accessories of the motor vehicles of headings # 87.01 -87.05	434,918	1.99	Other turkeys cuts and offals frozen	254,273	1.53
7	Fowl wings frozen	360,008	1.64	Other parts & accessories of the motor vehicles of headings # 87.01 -87.05	238,913	1.44
8	Reception apparatus for television: colour	312,730	1.43	New pneumatic tyres of a kind used on buses or lorries	201,480	1.21
9	Other electrical compression-type, household type refrigerators	311,708	1.42	Other whiskies	183,204	1.10
10	Other other articles of plastics/articles of other materials heading 39.01	229,816	1.05	Lubricating oils	176,705	1.06
	Total share		24.72	Total share		26.63
	Total trade effects	21,896,304		Total tariff revenue effects	16,637,742	

Table A-8. Dominica top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU and FTAA liberalization 2004

No.	Commodity description	Trade effect value in XC\$	Share	Commodity description	Change in import duty value in XC\$	Share
1	Transmission apparatus incorp. Reception appara.: portable radio-telephone	1,389,625	6.21	Transmission apparatus incorp. Reception appara.: portable radio-telephone	1,396,111	7.61
2	Other cuts and offals of fousls frozen	777,990	3.48	Other cuts and offals of fousls frozen	996,179	5.43
3	Building cement (grey)	642,938	2.87	Building cement (grey)	605,014	3.30
4	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	581,598	2.60	Fowl wings frozen	461,395	2.51
5	New pneumatic tyres of a kind used on buses or lorries	479,642	2.14	Other plywood	316,458	1.72
6	Other parts & accessories of the motor vehicles of headings # 87.01 -87.05	435,852	1.95	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	259,023	1.41
7	Other plywood	395,728	1.77	Other turkeys cuts and offals frozen	254,273	1.39
8	Fowl wings frozen	360,008	1.61	Other parts & accessories of the motor vehicles of headings # 87.01 -87.05	239,467	1.30
9	Other electrical compression-type, household type refrigerators	314,663	1.41	New pneumatic tyres of a kind used on buses or lorries	212,880	1.16
10	Other articles of plastics/articles of other materials heading 39.01	229,487	1.03	Other whiskies	183,204	1.00
	Total share		25.05	Total share		26.83
	Total trade effects	22,386,350		Total tariff revenue effects	18,352,424	

Table A-9. Grenada top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU liberalization 2004

No.	Commodity description	Trade effect value in XCS	Share	Commodity description	Change in import duty value in XCS	Share
1	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	1,484,171	9.62	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	472,748	7.32
2	Of a cylinder capacity exceeding 1800cc but not exceeding 2000cc	693,212	4.49	Of a cylinder capacity exceeding 1800cc but not exceeding 2000cc	234,996	3.64
3	Of a cylinder capacity exceeding 2000cc but not exceeding 3000cc	489,205	3.17	Condensed milk	183,269	2.84
4	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	336,535	2.18	Luncheon meat	169,797	2.63
5	Of a cylinder capacity exceeding 3000cc: other	326,598	2.12	Other	162,639	2.52
6	Condensed milk	287,180	1.86	Other whiskies	160,478	2.49
7	Other soy-bean oil and its fractions, whether/not refined, but not chem...	285,713	1.85	Of a cylinder capacity exceeding 2000cc but not exceeding 3000cc	159,311	2.47
8	Other electric lamps and lighting fittings	280,203	1.82	Salami sausages	154,941	2.40
9	Other furniture	259,545	1.68	Other soy-bean oil and its fractions, whether/not refined, but not chem...	140,256	2.17
10	Other wines	229,573	1.49	Beer	140,083	2.17
	Total share		30.28	Total share		30.65
	Total trade effects	15,426,787		Total tariff revenue effects	6,455,364	

Table A-10. Grenada top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU and Caribbean liberalization 2004

No.	Commodity description	Trade effect value in XC\$	Share	Commodity description	Change in import duty value in XC\$	Share
1	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	1,623,112	8.87	Other motor spirit (gasoline)	958,354	10.55
2	Other motor spirit (gasoline)	1,256,266	6.87	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	532,089	5.86
3	Of a cylinder capacity exceeding 1800cc but not exceeding 2000cc	750,833	4.10	Of a cylinder capacity exceeding 1800cc but not exceeding 2000cc	264,332	2.91
4	Of a cylinder capacity exceeding 2000cc but not exceeding 3000cc	524,573	2.87	Condensed milk	206,800	2.28
5	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	351,208	1.92	Luncheon meat	190,943	2.10
6	Of a cylinder capacity exceeding 3000cc: other	350,210	1.91	Other	183,521	2.02
7	Condensed milk	307,942	1.68	Other whiskies	181,166	1.99
8	Other furniture	286,165	1.56	Of a cylinder capacity exceeding 2000cc but not exceeding 3000cc	179,766	1.98
9	Other electric lamps and lighting fittings	278,270	1.52	Salami sausages	174,284	1.92
10	Other wines	245,759	1.34	Beer	158,038	1.74
	Total share		32.66	Total share		33.34
	Total trade effects	18,292,421		Total tariff revenue effects	9,085,068	

Table A-11. Grenada top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU, Caribbean and NAFTA liberalization 2004

No.	Commodity description	Trade effect value in XC\$	Share	Commodity description	Change in import duty value in XC\$	Share
1	Transmission apparatus incorp. Reception appara.: portable radio-telephone	2,790,054	6.29	Transmission apparatus incorp. Reception appara.: portable radio-telephone	2,317,537	6.92
2	Other cuts and offals of fous frozen	2,045,557	4.61	Other cuts and offals of fous frozen	2,046,084	6.11
3	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	1,795,104	4.05	Other motor spirit (gasoline)	934,715	2.79
4	Other motor spirit (gasoline)	1,048,504	2.36	Other food preparations not elsewhere specified or included	761,339	2.27
5	Other plywood	733,383	1.65	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	737,302	2.20
6	Other parts & accessories of the motor vehicles of headings # 87.01 -87.05	722,512	1.63	Other parts & accessories of the motor vehicles of headings # 87.01 -87.05	462,761	1.38
7	Of a cylinder capacity exceeding 2000cc but not exceeding 3000cc	691,718	1.56	Other plywood	451,890	1.35
8	Of a cylinder capacity exceeding 1800cc but not exceeding 2000cc	682,017	1.54	Fully-automatic machines for domestic use	417,598	1.25
9	Fully-automatic machines for domestic use	625,601	1.41	Other electrical combined refrigerator-freezer	311,341	0.93
10	Other food preparations not elsewhere specified or included	610,509	1.38	Of a cylinder capacity exceeding 1800cc but not exceeding 2000cc	303,641	0.91
	Total share		26.47	Total share		26.11
	Total trade effects	44,366,362		Total tariff revenue effects	33,484,151	

Table A-12. Grenada top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU and FTAA liberalization 2004

No.	Commodity description	Trade effect value in XC\$	Share	Commodity description	Change in import duty value in XC\$	Share
1	Transmission apparatus incorp. Reception appara.: portable radio-telephone	2,831,449	6.11	Transmission apparatus incorp. Reception appara.: portable radio-telephone	2,303,576	6.52
2	Other cuts and offals of fous frozen	1,924,386	4.15	Other cuts and offals of fous frozen	2,253,726	6.38
3	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	1,834,933	3.96	Other motor spirit (gasoline)	920,051	2.60
4	Other motor spirit (gasoline)	1,071,767	2.31	Other food preparations not elsewhere specified or included	750,778	2.12
5	Other plywood	742,787	1.60	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	725,735	2.05
6	Other parts & accessories of the motor vehicles of headings # 87.01 -87.05	738,678	1.59	Other plywood	533,611	1.51
7	Of a cylinder capacity exceeding 2000cc but not exceeding 3000cc	707,066	1.53	Other parts & accessories of the motor vehicles of headings # 87.01 -87.05	454,592	1.29
8	Of a cylinder capacity exceeding 1800cc but not exceeding 2000cc	697,150	1.50	Fully-automatic machines for domestic use	411,046	1.16
9	New pneumatic tyres of a kind used on motor car (incl. Station wagons	641,048	1.38	Stoves & ranges	357,546	1.01
10	Fully-automatic machines for domestic use	639,482	1.38	Other electrical combined refrigerator-freezer	336,086	0.95
	Total share		25.52	Total share		25.60
	Total trade effects	46,350,877		Total tariff revenue effects	35,338,865	

Table A-13. St. Kitts & Nevis top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU liberalization 2004

No	Commodity description	Trade effect value in XC\$	Share	Commodity description	Change in import duty value in XC\$	Share
1	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	352,869	5.20	Brandy, in bottles of a strength not exceeding 46% volume	195,145	6.40
2	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	286,582	4.23	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	181,068	5.93
3	Other food preparations not elsewhere specified or included	283,916	4.19	Aerated beverages	128,058	4.20
4	Of a cylinder capacity exceeding 2000cc but not exceeding 3000cc	276,269	4.07	Of a cylinder capacity exceeding 2000cc but not exceeding 3000cc	125,428	4.11
5	New pneumatic tyres of a kind used on buses or lorries	270,957	4.00	Other food preparations not elsewhere specified or included	116,355	3.81
6	Brandy, in bottles of a strength not exceeding 46% volume	196,447	2.90	New pneumatic tyres of a kind used on buses or lorries	91,930	3.01
7	Other apparatus	182,525	2.69	New pneumatic tyres of a kind used on motor car (incl. Station wagons)	80,273	2.63
8	New pneumatic tyres of a kind used on motor car (incl. Station wagons)	180,648	2.66	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	77,783	2.55
9	Aerated beverages	173,829	2.56	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	75,305	2.47
10	Wooden furniture of a kind used in the kitchen	155,486	2.29	Wooden furniture of a kind used in the kitchen	71,216	2.33
	Total share		34.80	Total share		37.45
	Total trade effects	6,780,429		Total tariff revenue effects	3,051,055	

Table A-14. St. Kitts & Nevis top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU and Caribbean liberalization 2004

No.	Commodity description	Trade effect value in XCS	Share	Commodity description	Change in import duty value in XCS	Share
1	Other motor spirit (gasoline)	1,560,107	14.52	Other motor spirit (gasoline)	1,220,445	20.30
2	Aerated beverages	461,371	4.30	Aerated beverages	412,401	6.86
3	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	400,367	3.73	Other gas oils	276,779	4.60
4	Other gas oils	376,876	3.51	Brandy, in bottles of a strength not exceeding 46% volume	195,380	3.25
5	Transmission apparatus incorp. Reception appara.: portable radio-telephone	357,791	3.33	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	181,068	3.01
6	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	352,869	3.29	Beer	150,482	2.50
7	Other food preparations not elsewhere specified or included	293,628	2.73	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	147,716	2.46
8	Of a cylinder capacity exceeding 2000cc but not exceeding 3000cc	287,694	2.68	Transmission apparatus incorp. Reception appara.: portable radio-telephone	140,239	2.33
9	New pneumatic tyres of a kind used on buses or lorries	273,565	2.55	Other food preparations not elsewhere specified or included	131,676	2.19
10	New pneumatic tyres of a kind used on motor car (incl. Station wagons	211,192	1.97	Of a cylinder capacity exceeding 2000cc but not exceeding 3000cc	123,915	2.06
	Total share		42.60	Total share		49.57
	Total trade effects	10,741,659		Total tariff revenue effects	6,012,502	

Table A-15. St. Kitts & Nevis top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU, Caribbean and NAFTA liberalization 2004

	Commodity description	Trade effect value in XC\$	Share	Commodity description	Change in import duty value in XC\$	Share
1	Other motor spirit (gasoline)	1,348,646	4.32	Other motor spirit (gasoline)	1,319,192	4.77
2	Of a cylinder capacity exceeding 2000cc but not exceeding 3000cc	1,067,562	3.42	Transmission apparatus incorp. Reception appara.: portable radio-telephone	963,323	3.48
3	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	1,031,780	3.31	Aerated beverages	661,726	2.39
4	Transmission apparatus incorp. Reception appara.: portable radio-telephone	930,496	2.98	Other food preparations not elsewhere specified or included	626,957	2.27
5	Other food preparations not elsewhere specified or included	604,111	1.94	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	614,578	2.22
6	Other plywood	530,861	1.70	Of a cylinder capacity exceeding 2000cc but not exceeding 3000cc	585,377	2.12
7	Other foot-ware	525,865	1.68	Other waters , include . Min. Waters and aerated waters cont added sugar	461,777	1.67
8	Other furniture	482,388	1.55	Other plywood	403,247	1.46
9	Aerated beverages	388,762	1.25	Other foot-ware	314,397	1.14
10	Other gas oils	338,751	1.09	Herrings, alewives, saithe, pollock, haddock & hake	307,819	1.11
	Total share		23.23	Total share		22.62
	Total trade effects	31,210,984		Total tariff revenue effects	27,661,853	

Table A-16. St. Kitts & Nevis top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU and FTAA liberalization 2004

	Commodity description	Trade effect value in XC\$	Share	Commodity description	Change in import duty value in XC\$	Share
1	Other motor spirit (gasoline)	1,348,646	4.36	Other motor spirit (gasoline)	1,319,192	4.59
2	Of a cylinder capacity exceeding 2000cc but not exceeding 3000cc	1,067,562	3.45	Transmission apparatus incorp. Reception appara.: portable radio-telephone	963,457	3.35
3	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	1,040,254	3.37	Other food preparations not elsewhere specified or included	707,595	2.46
4	Transmission apparatus incorp. Reception appara.: portable radio-telephone	926,989	3.00	Aerated beverages	661,726	2.30
5	Other food preparations not elsewhere specified or included	566,923	1.83	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	619,276	2.16
6	Other foot-ware	512,720	1.66	Of a cylinder capacity exceeding 2000cc but not exceeding 3000cc	585,377	2.04
7	Other furniture	483,711	1.56	Other waters , include . Min. Waters and aerated waters cont added sugar	461,828	1.61
8	Other plywood	477,320	1.54	Other plywood	420,573	1.46
9	Aerated beverages	388,762	1.26	Radio-broadcast receivers combined with sound record or repro. Apparatus	338,925	1.18
10	Other gas oils	338,751	1.10	Other foot-ware	325,872	1.13
	Total share		23.14	Total share		22.29
	Total trade effects	30,908,437		Total tariff revenue effects	28,731,716	

Table A-17. St. Lucia top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU liberalization 2004

	Commodity description	Trade effect value in XC\$	Share	Commodity description	Change in import duty value in XC\$	Share
1	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	1,984,893	7.79	Whiskies in bottles of a strength not exceeding 46% volume	1,598,074	11.89
2	Other wine in containers holding 2 litres or less	1,120,252	4.40	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	1,005,655	7.48
3	Whiskies in bottles of a strength not exceeding 46% volume	1,056,958	4.15	Other wine in containers holding 2 litres or less	890,652	6.63
4	Of a cylinder capacity exceeding 2000cc but not exceeding 3000cc	1,048,469	4.12	Brandy, in bottles of a strength not exceeding 46% volume	586,932	4.37
5	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	829,442	3.26	Of a cylinder capacity exceeding 2000cc but not exceeding 3000cc	495,140	3.68
6	Transmission apparatus incorp. Reception appara.: portable radio-telephone	715,591	2.81	Liqueurs and cordials	371,618	2.77
7	Liqueurs and cordials	702,682	2.76	Sparkling wine	343,923	2.56
8	Other waters , include . Min. Waters and aerated waters cont added sugar	676,798	2.66	Of a cylinder capacity exceeding 1800cc but not exceeding 2000cc	291,664	2.17
9	Aerated beverages	576,332	2.26	Other waters , include . Min. Waters and aerated waters cont added sugar	290,153	2.16
10	Of a cylinder capacity exceeding 1800cc but not exceeding 2000cc	559,847	2.20	Vodka	269,208	2.00
	Total share		36.40	Total share		45.72
	Total trade effects	25,470,216		Total tariff revenue effects	13,436,768	

Table A-18. St. Lucia top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU and Caribbean liberalization 2004

	Commodity description	Trade effect value in XC\$	Share	Commodity description	Change in import duty value in XC\$	Share
1	Transmission apparatus incorp. Reception appara.: portable radio-telephone	4,037,413	14.18	Transmission apparatus incorp. Reception appara.: portable radio-telephone	1,684,108	10.51
2	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	2,026,053	7.11	Whiskies in bottles of a strength not exceeding 46% volume	1,598,074	9.98
3	Other wine in containers holding 2 litres or less	1,112,975	3.91	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	1,009,780	6.30
4	Whiskies in bottles of a strength not exceeding 46% volume	1,056,958	3.71	Other wine in containers holding 2 litres or less	908,083	5.67
5	Of a cylinder capacity exceeding 2000cc but not exceeding 3000cc	1,048,469	3.68	Brandy, in bottles of a strength not exceeding 46% volume	586,932	3.66
6	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	797,741	2.80	Of a cylinder capacity exceeding 2000cc but not exceeding 3000cc	495,140	3.09
7	Of a cylinder capacity exceeding 1800cc but not exceeding 2000cc	559,847	1.97	Liqueurs and cordials	357,195	2.23
8	Other detergents	529,141	1.86	Sparkling wine	343,923	2.15
9	Brandy, in bottles of a strength not exceeding 46% volume	506,372	1.78	Other detergents	323,479	2.02
10	Other cheese	500,203	1.76	Of a cylinder capacity exceeding 1800cc but not exceeding 2000cc	291,664	1.82
	Total share		42.75	Total share		47.43
	Total trade effects	28,478,006		Total tariff revenue effects	16,020,211	

Table A-19. St. Lucia top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU, Caribbean and NAFTA liberalization 2004

	Commodity description	Trade effect value in XC\$	Share	Commodity description	Change in import duty value in XC\$	Share
1	Transmission apparatus incorp. Reception appara.: portable radio-telephone	3,595,852	5.38	Transmission apparatus incorp. Reception appara.: portable radio-telephone	3,078,844	5.86
2	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	2,161,403	3.24	Whiskies in bottles of a strength not exceeding 46% volume	1,726,983	3.29
3	Other plywood	2,137,425	3.20	Other wine in containers holding 2 litres or less	1,291,917	2.46
4	Other wine in containers holding 2 litres or less	1,219,595	1.83	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	1,077,685	2.05
5	Of a cylinder capacity exceeding 2000cc but not exceeding 3000cc	1,207,409	1.81	Other plywood	886,824	1.69
6	Of a cylinder capacity exceeding 1800cc but not exceeding 2000cc	895,947	1.34	Brandy, in bottles of a strength not exceeding 46% volume	885,322	1.69
7	Sandals and slippers	844,718	1.26	Other waters , include . Min. Waters and aerated waters cont added sugar	736,327	1.40
8	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	805,845	1.21	Liqueurs and cordials	660,895	1.26
9	Whiskies in bottles of a strength not exceeding 46% volume	779,583	1.17	Other detergents	631,154	1.20
10	Other detergents	748,854	1.12	Of a cylinder capacity exceeding 2000cc but not exceeding 3000cc	558,352	1.06
	Total share		21.55	Total share		21.97
	Total trade effects	66,790,312		Total tariff revenue effects	52,508,788	

Table A-20. St. Lucia top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU and FTAA liberalization 2004

	Commodity description	Trade effect value in XC\$	Share	Commodity description	Change in import duty value in XC\$	Share
1	Transmission apparatus incorp. Reception appara.: portable radio-telephone	3,492,793	5.37	Transmission apparatus incorp. Reception appara.: portable radio-telephone	3,089,284	5.59
2	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	2,182,842	3.35	Whiskies in bottles of a strength not exceeding 46% volume	1,726,983	3.13
3	Other plywood	1,495,338	2.30	Other wine in containers holding 2 litres or less	1,553,504	2.81
4	Of a cylinder capacity exceeding 2000cc but not exceeding 3000cc	1,207,409	1.86	Other plywood	1,095,487	1.98
5	Of a cylinder capacity exceeding 1800cc but not exceeding 2000cc	895,947	1.38	Of a cylinder capacity exceeding 1500cc but not exceeding 1800cc	1,063,931	1.93
6	Sandals and slippers	887,438	1.36	Brandy, in bottles of a strength not exceeding 46% volume	885,322	1.60
7	Other wine in containers holding 2 litres or less	863,263	1.33	Other waters , include . Min. Waters and aerated waters cont added sugar	753,280	1.36
8	Other footwear with outer soles of rubber plastics leath. Or comp. Leather	837,947	1.29	Liqueurs and cordials	660,895	1.20
9	Whiskies in bottles of a strength not exceeding 46% volume	779,583	1.20	Other detergents	647,873	1.17
10	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	769,330	1.18	Of a cylinder capacity exceeding 2000cc but not exceeding 3000cc	558,352	1.01
	Total share		20.61	Total share		21.80
	Total trade effects	65,067,726		Total tariff revenue effects	55,217,166	

Table A-21. St. Vincent & the Grenadines top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU liberalization 2004

	Commodity description	Trade effect value in XCS	Share	Commodity description	Change in import duty value in XCS	Share
1	Other electrical compression-type, household type refrigerators	561,286	8.56	Other electrical compression-type, household type refrigerators	325,233	9.21
2	Other potatoes fresh or chilled	250,859	3.83	Other cane or beet sugar in solid form	182,377	5.17
3	Onions	194,892	2.97	Other potatoes fresh or chilled	172,038	4.87
4	Frost free, electrical, compression-type, household refrigerator	177,087	2.70	Onions	165,736	4.69
5	Stoves & ranges	162,030	2.47	Salami sausages	116,869	3.31
6	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	158,065	2.41	Frost free, electrical, compression-type, household refrigerator	92,670	2.63
7	Tiles cubes & similar articles	156,411	2.39	Stoves & ranges	91,206	2.58
8	Other food preparations not elsewhere specified or included	148,528	2.27	Other sugar confectionery	86,056	2.44
9	Other cane or beet sugar in solid form	142,672	2.18	Other food preparations not elsewhere specified or included	79,837	2.26
10	Other sugar confectionery	141,433	2.16	Processed cheese, not grated or powdered	69,723	1.98
	Total share		31.92	Total share		39.14
	Total trade effects	6,557,085		Total tariff revenue effects	3,530,253	

Table A-22. St. Vincent & the Grenadines top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU and Caribbean liberalization 2004

	Commodity description	Trade effect value in XCS	Share	Commodity description	Change in import duty value in XCS	Share
1	Other electrical compression-type, household type refrigerators	561,962	7.12	Other electrical compression-type, household type refrigerators	325,766	7.78
2	Other potatoes fresh or chilled	250,504	3.18	Onions	194,148	4.64
3	Tiles cubes & similar articles	213,401	2.71	Other potatoes fresh or chilled	191,375	4.57
4	Onions	201,439	2.55	Other cane or beet sugar in solid form	182,377	4.36
5	Frost free, electrical, compression-type, household refrigerator	177,087	2.25	Salami sausages	116,874	2.79
6	Other medicaments (excl. Goods of heading no. 30.02; 30.05 or 30.06)	171,790	2.18	Stoves & ranges	92,976	2.22
7	Stoves & ranges	164,859	2.09	Frost free, electrical, compression-type, household refrigerator	92,670	2.21
8	Other food preparations not elsewhere specified or included	162,585	2.06	Other food preparations not elsewhere specified or included	90,600	2.16
9	Other sugar confectionery	143,554	1.82	Other sugar confectionery	88,038	2.10
10	Fittings	142,851	1.81	Processed cheese, not grated or powdered	69,732	1.67
	Total share		27.77	Total share		34.50
	Total trade effects	7,887,537		Total tariff revenue effects	4,187,588	

Table A-23. St. Vincent & the Grenadines top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU, Caribbean, and NAFTA liberalization 2004

	Commodity description	Trade effect value in XC\$	Share	Commodity description	Change in import duty value in XC\$	Share
1	Other plywood	941,123	4.97	Other plywood	479,363	3.13
2	Other electrical compression-type, household type refrigerators	596,189	3.15	Other electrical compression-type, household type refrigerators	462,284	3.02
3	Tiles cubes & similar articles	477,712	2.52	Other cuts and offals of fous frozen	318,274	2.08
4	Frost free, electrical, compression-type, household refrigerator	450,291	2.38	Frost free, electrical, compression-type, household refrigerator	269,384	1.76
5	Other foot-ware	399,725	2.11	Fully-automatic machines for domestic use	263,730	1.72
6	Other coniferous wood	319,095	1.69	Other potatoes fresh or chilled	241,001	1.57
7	Fully-automatic machines for domestic use	298,061	1.57	Onions	224,307	1.46
8	Sandals and slippers	297,654	1.57	Stoves & ranges	212,646	1.39
9	Pitch-pine	248,474	1.31	Other food preparations not elsewhere specified or included	206,800	1.35
10	Stoves & ranges	231,957	1.23	Other coniferous wood	191,943	1.25
	Total share		22.50	Total share		18.73
	Total trade effects	18,934,252		Total tariff revenue effects	15,321,022	

Table A-24. St. Vincent & the Grenadines top ten imports most affected products by trade and tariff revenue effects under mid elasticity EU and FTAA liberalization 2004

	Commodity description	Trade effect value in XC\$	Share	Commodity description	Change in import duty value in XC\$	Share
1	Other plywood	664,098	3.48	Other plywood	562,692	3.33
2	Other electrical compression-type, household type refrigerators	573,322	3.01	Other electrical compression-type, household type refrigerators	466,193	2.76
3	Frost free, electrical, compression-type, household refrigerator	481,087	2.52	Frost free, electrical, compression-type, household refrigerator	318,808	1.89
4	Other foot-ware	427,454	2.24	Other cuts and offals of fous frozen	318,274	1.89
5	Sandals and slippers	369,461	1.94	Tiles cubes & similar articles	282,913	1.68
6	Tiles cubes & similar articles	359,765	1.89	Fully-automatic machines for domestic use	263,773	1.56
7	Fully-automatic machines for domestic use	297,564	1.56	Other potatoes fresh or chilled	241,001	1.43
8	Other coniferous wood	256,658	1.35	Onions	224,307	1.33
9	Other cuts and offals of fous frozen	219,734	1.15	Stoves & ranges	213,605	1.27
10	Stoves & ranges	190,398	1.00	Other coniferous wood	209,263	1.24
	Total share		20.14	Total share		18.37
	Total trade effects	19,065,694		Total tariff revenue effects	16,880,515	

LIST OF REFERENCES

- Acemoglu, D., S. Johnson, and J. Robinson. 2004. "Institutions as the Fundamental Cause of Long-Run Growth." In P. Aghion and S. Durlauf, eds. *Handbook of Economic Growth*. Amsterdam: Elsevier Science, pp. 385-472.
- Anderson, J.E. 1979. "A Theoretical Foundation for the Gravity Equation." *The American Economic Review* 69(1):106-116.
- Anderson, J.E. and E. van Wincoop. 2003. "Gravity with Gravitas: A Solution to the Border Puzzle." *The American Economic Review* 93(1):170-192.
- Balassa, B. 1971. *The structure of protection in developing countries*. Baltimore, MD: Johns Hopkins University Press.
- Baldwin, R.E. 2000. "Trade and Growth: Still Disagreement About the Relationship", Working Paper no. 264, Economics Department, Organization for Economic Cooperation and Development, Paris.
- Baldwin, R.E. and T. Murray. 1977. "MFN Tariff Reductions and Developing Country Trade Benefits Under the GSP." *The Economic Journal* 87(345):30-46.
- Baunsgaard, T. and M. Keen. 2005. "Tax Revenue and (or?) Trade Liberalization". IMF Working Paper no. 05/112, International Monetary Fund, Washington, D.C.
- Berezin, P., A. Salehizadeh, and E. Santana. 2002. "The Challenge of Diversification in the Caribbean." IMF Working Paper no. 02/196, International Monetary Fund, Washington, D.C.
- Berg, A. and A. Krueger. 2003. "Trade, Growth, and Poverty: A Selective Survey." IMF Working Paper no. 03/30, International Monetary Fund, Washington, D.C.
- Bergstrand, J.H. 1985. "The Gravity Equation in International Trade: Some Microeconomic Foundations and Empirical Evidence." *The Review of Economics and Statistics* 67(3):474-481.
- Bergstrand, J.H. 1989. "The Generalized Gravity Equation, Monopolistic Competition, and the Factor-Proportions Theory in International Trade." *The Review of Economics and Statistics* 71(1):143-153.
- Bhagwati, J. 1978. *Anatomy and consequences of exchange control regimes*. Cambridge, MA: NBER.
- Bhagwati, J. and A. Panagariya. 1996. "Preferential Trading Areas and Multilateralism-Strangers Friends, or Foes?" In J. Bhagwati and A. Panagariya, eds. *The Economics of Preferential Trade Agreements*. Washington D.C: American Enterprise Institute, pp. 1-78.

- Bhagwati, J. and T.N. Srinivasan. 1999. "Outward-Orientation and Development: Are Revisionists Right?" Discussion Paper no. 806, Economic Growth Center, Yale University, New Haven.
- Borrmann, A., M. Busse, and S. Neuhaus. 2005. "EU/ACP Economic Partnership Agreements: Impact, Options and Prerequisites." *Intereconomics* (May/June):169-176.
- Borrmann, A., H. Grossman, and G. Koopmann. 2006. "The WTO Compatibility of the Economic Partnership Agreements between the EU and the ACP Countries." *Intereconomics* (March/April):115-121.
- Busse, M., A. Borrmann, and H. Grossmann. 2004. "The Impact of ACP/EU Economic Partnership Agreements on ECOWAS Countries: An Empirical Analysis of the Trade and Budget Effects." Final Report, Hamburg Institute of International Economics, Hamburg.
- Busse, M. and G. Koopman. 2001. "The EU-Mexico Free Trade Agreement: Incentives, Context and Effects." Hamburg Institute of International Economics, Hamburg.
- Busse, M. and R. Shams. 2003. "Trade Effects of the East African Community: Do We need a Transitional Fund?" Hamburg Institute of International Economics, Hamburg.
- Cernat, L. 2001. "Assessing Regional Trade Arrangements: Are South-South RTA's More Trade Diverting?" Policy Issues in International Trade and Commodities Study Series No.16, United Nations Trade and Development Conference, Geneva.
- Central Intelligence Agency. 2006. *The World Factbook*. Web Accessed: <https://www.cia.gov/library/publications/the-world-factbook/> May 31, 2006.
- Clague, C.F. 1971. "Tariff Preferences and Separable Utility." *American Economic Review* 61(2):188-194.
- Clague, C.F. 1972. "The Trade Effects of Tariff Preferences." *Southern Economic Journal* 5438(3):379-389.
- Conway, D. 1997. "Pursuing an Appropriate Development Model for Caribbean Small Islands: Can Past Experience help Subvert the Neo-Liberal Agenda?" Neoliberal Theory and Practice in Latin America and the Caribbean, Guadalajara, Mexico.
- Cooper, C.A. and B.F. Massell. 1965a. "A New Look at Customs Union Theory." *Economic Journal* 75(300):742-747.
- _____. 1965b. "Toward a General Theory of Customs Unions for Developing Countries." *Journal of Political Economy* 73(5):461-476.
- Corden, W.M. 1972. "Economies of Scale and Customs Unions Theory." *Journal of Political Economy* 80(3, Part 1):465-75.

- Dayal, R. and N. Dayal. 1977. "Trade Creation and Trade Diversion: New Concepts, New Methods of Measurement." *Weltwirtschaftliches Archiv* 113(1):125-169.
- DeRosa, D. 1998. "Regional Integration Arrangements: Static Economic Theory, Quantitative Findings, and Policy Guidelines." Policy Research Working Paper no.2007, The World Bank. Washington D.C.
- _____. 2000. "Trade Policies and Prospects of the Eastern Caribbean States in the New Global Economy." Web Accessed: http://www.adr-intl.com/ECS_070300.pdf. May 2, 2006.
- Dollar, D. 1992. "Outward-Oriented Developing Economies Really Do Grow More Rapidly: Evidence form 95 LDCs, 1976-1985." *Economic Development and Cultural Change* 40(3):523-544.
- Dollar, D. and A. Kraay. 2002. "Growth is Good for the Poor." *Journal of Economic Growth* 7:195-225.
- Dollar, D. and A. Kraay. 2003. "Institutions, Trade and Growth." *Journal of Monetary Economics* 50:133-162.
- Easterly, W. and A. Kraay. 1999. "Small States, Small Problems?" Policy Research Working Paper no. 2139, The World Bank, Washington, D.C.
- Eastern Caribbean Central Bank. 2004. Annual Economic and Financial Review. Web Accessed: <http://www.eccb-centralbank.org/PDF/aefr2004.pdf>. March 1, 2007.
- Ebrill, L., J. Stotsky, and R. Gropp. 1999. "Revenue Implications of Trade Liberalization." Occasional Paper no. 180, International Monetary Fund, Washington, D.C.
- Economic Commission for Latin America and the Caribbean. 2006. Statistical Yearbook for Latin America and the Caribbean. ECLAC, Santiago de Chile.
- Edwards, S. 1993. "Openness, Trade Liberalization, and Growth in Developing Countries." *Journal of Economic Literature* 31(3):1358-1393.
- Edwards, S. 1997. "Trade Liberalization Reforms and the World Bank." *The American Economic Review* 87(2):43-48.
- Edwards, S. 1998. "Openness, Productivity and Growth: What do We Really Know." *The Economic Journal* 108:383-398.
- Egoumé-Bossogo P. and C. Mendis. 2002. "Trade and Integration in the Caribbean." Working Paper no. 02/148, International Monetary Fund, Washington, D.C.
- Escaith, H. 2001. "The small economies of Latin America and the Caribbean." *Cepal Review* 74:67-81.

- Escaith, H. and K. Inoue. 2001. "Small Economies' Tariff and Subsidy Policies in the Face of Trade Liberalization in the Americas." *Integration and Trade Journal* 14:3-28.
- Finger, J.M., F. Ng, and I. Soloaga. 1998. "Trade Policies in the Caribbean Countries: A Look at the Positive Agenda." Paper presented at the meetings of the Caribbean Group for Cooperation on Economic Development, Washington D.C., 8 June.
- Frankel, J., E. Stein, and S. Wei. 1995. "Trading blocs and the Americas: The natural, the unnatural, and the super-natural." *Journal of Development Economics* 47:61-95.
- Frankel, J.A. and D. Romer. 1999. "Does Trade Cause Growth?" *The American Economic Review* 89(3):379-399.
- Gasiorek, M., J. Litchfield, M. Haynes, J. Chwiejczak, G. Varela, and L.A. Winters. 2006. "The impact of the EPAs of the Cotonou Agreement on trade, production and poverty alleviation in the Caribbean region." Final Report, Poverty Research Unit, University of Sussex.
- Gasiorek, M. and L.A. Winters. 2004. "What Role for the EPAs in the Caribbean." *The World Economy* 27 (9):1335-1362.
- Greenaway, D. and C. Milner. 1991. "Fiscal Dependence on Trade Taxes and Trade Reform." *Journal of Development Studies* 27(3):95-135.
- Greenaway, D. and C. Milner. 2002. "Regionalism and Gravity." *Scottish Journal of Political Economy* 49(5):574-585.
- Greenaway, D. and C. Milner. 2003. "A Grim REPA?" Research Paper No.2003/30, Leverhulme Centre on Globalization and Economic Policy, University of Nottingham.
- Greenaway, D., W. Morgan, and P. Wright. 2002. "Trade liberalisation and growth in developing countries." *Journal of Development Economics* 67:229-244.
- Grether, J.M. and M. Olarreaga. 1998. "Preferential and Non-Preferential Trade Flows in World Trade." Working Paper no. ERAD-98-10, World Trade Organization, Geneva.
- Hallak, C.J. and J. Levinsohn. 2004. "Fooling Ourselves: Evaluating the Globalization and Growth Debate." Working Paper no. 10244, National Bureau of Economic Research, Washington, D.C.
- Harrison, A. 1996. "Openness and Growth: A Times-Series, Cross-Country Analysis for Developing Countries." *Journal of Development Economics* 48:419-447.
- Harrison, G.W., T.F. Rutherford, D. Tarr. 2002. "Trade Policy Options for Chile. The Importance of Market Access." *The World Bank Economic Review* 16(1):49-79.
- Harrison, G.W., T.F. Rutherford, D.G. Tarr and A. Gurgel. 2003. "Regional, Multilateral and Unilateral Trade Policies of MERCOSUR for Growth and Poverty Reduction in Brazil." Policy Research Working Paper no.3051, The World Bank, Washington, D.C.

- Head, K. 2003. "Gravity for Beginners." Faculty of Commerce, University of British Columbia. Web Accessed: <http://strategy.sauder.ubc.ca/head//gravity.pdf>. April 21, 2006.
- Inter-American Development Bank. 2004. "Integration and Trade in the Americas: Fiscal Impacts of Trade Liberalization in the Americas." Periodic Note, Inter-American Development Bank, Washington D.C.
- International Monetary Fund . 2005. Dealing with the Revenue Consequences of Trade Reform. Washington, D. C., International Monetary Fund.
- Johnson, H.G. 1960. "The Economic Theory of Customs Union." *Pakistan Economic Journal* X(1):14-32.
- Karemera, D. and W. Koo. 1994. "Trade Creation and Diversion Effects of the U.S.-Canadian Free Trade Agreement." *Contemporary Economic Policy* 12:12-23.
- Karsteny, G. and S. Laird. 1986. "The GSP, Policy Options and the New Round." *Weltwirtschaftliches Archiv* 123:262-295.
- Kee, H.L., A. Nicita, and M. Olarreaga. 2004. "Import Demand Elasticities and Trade Distortions." Policy Research Working Paper no. 3452, The World Bank, Washington, D.C.
- Kerkala, L., J. Niemi, and R. Vaittinen. 2000. "Renegotiating the Lomé Convention-Trade Policy Schemes and Their Effects for African Regions." Helsinki School of Economics and Business Administration.
- Khattry, B. and J. M. Rao. 2002. "Fiscal Faux pas?: An Analysis of the Revenue Implications of Trade Liberalization." *World Development* 30(8):1431-1444.
- Krueger, A.O. 1978. *Foreign trade regimes and economic development: Liberalization attempts and consequences*. Cambridge, MA: NBER.
- _____. 1998. "Why Trade Liberalization is Good for Growth." *The Economic Journal* 108(450):1513-1522.
- _____. 1980. "Trade Policy as an Input to Development." *The American Economic Review* 70(2):288-292.
- _____. 1997. "Trade Policy and Economic Development: How We Learn." *The American Economic Review* 87(1):1-22.
- _____. 1999. "Are Preferential Trading Arrangements Trade-Liberalizing or Protectionist?" *Journal of Economic Perspectives* 13(4): 05-124.
- Laird, S. and A. Yeats 1986. "The UNCTAD Trade Policy Simulation Model: A note on the methodology, data and uses." UNCTAD, Geneva.

- Laird, S. and A. Yeats 1990. *Quantitative Methods for Trade-Barrier Analysis*. New York, NY: New York University Press.
- Lewis, D. and A. Webster 2001. "Export Specialisation in the Caribbean and its Implications for Trade Negotiations." *The World Economy* 24:809-828.
- Lipsey, R.G. 1957. "The Theory of Customs Unions: Trade Diversion and Welfare." *Economica* 24:40-46.
- Lipsey, R.G. 1960. "The Theory of Customs Unions: A General Survey." *Economic Journal* 70(279):496-513.
- Little, I., T. Scitovsky, and M. Scott. 1970. *Industry and trade in some developing countries*. London: Oxford University Press.
- MacPhee, C.R. 1987. "The Consistency of Partial Equilibrium Estimates of Trade Creation and Diversion." *Weltwirtschaftliches Archiv* 123:81-92.
- MacPhee, C.R. and V.I. Oguledo. 1991. "The trade effects of the US Generalized System of Preferences." *Atlantic Economic Journal* 19:19-26.
- Matusz, S.J. and D. Tarr. 1999. "Adjusting to Trade Policy Reform." World Bank Policy Research Paper no. 2142, The World Bank, Washington, D.C.
- Matyas, L. 1997. "Proper Econometric Specification of the Gravity Model." *The World Economy* 20:363-368.
- McCarthy, F.D. and G. Zanalda. 1995. "Economic Performance in Small Open Economies." Policy Research Working Paper no. 1544, The World Bank, Washington, D.C.,
- McCoy, T.L. 2000. "Globalization and the Caribbean: Reconsidering the Options." In M. Vellinga ed. *The Dialectics of Globalization*. Boulder, CO: Westview Press. pp.201-219.
- Meade, J.E. 1955. *The Theory of Customs Unions*. Amsterdam: North-Holland.
- Mundell, R.A. 1964. "Tariff Preferences and the Terms of Trade." *Manchester School of Economic and Social Studies* XXXII(1): 1-13.
- Nielsen, C.P. 2003. "Regional Preferential Agreements: A Literature Review and Identification of Future Steps." Report no. 155, Fodevareokonomisk Institut, Copenhagen.
- Nilson, L. 2002. "Trading Relations: Is the Roadmap from Lome to Cotonou Correct?" *Applied Economics* 34(4):439-453.
- North, D. 1990. *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press.
- Ocampo, J.A. 2002. "Small Economies in the Face of Globalisation." Third William G. Demas Memorial Lecture at the Caribbean Development Bank, Cayman Islands.

- Organisation of Eastern Caribbean States. 2002. "OECS Human Development Report 2002." Organisation of Eastern Caribbean States, St. Lucia.
- Oguledo, V.I. and C.R. MacPhee 1994. "Gravity Models: A Reformulation and an Application to Discriminatory Trade Arrangements." *Applied Economics* 26:107-120.
- Ozden, C. and E. Reinhardt 2005. "The Perversity of Preferences: GSP and Developing Country Trade Policies, 1976-2000." *Journal of Development Economics* 78:1-21.
- Panagariya, A. 1997. "The Meade Model of Preferential Trading: History, Analytics, and Policy Implications." In B. Cohen. ed. *International Trade and Finance: New Frontiers for Research, Essays in Honor of Peter B. Kenen*. New York: Cambridge University Press. pp. 57-88.
- Peters, A. 2002. "The Fiscal Effects of Tariff Reductions in the Caribbean Community." Economic Intelligence and Policy Unit CARICOM Secretariat.
- Piermartini, R. and R. Teh 2005. Demystifying Modelling Methods for Trade Policy. Discussion Paper no. 10, World Trade Organization, Geneva.
- Pomfret, R. 1986. "The Effects of Trade Preferences for Developing Countries." *Southern Economic Journal* 53(1):18-26.
- Pomfret, R. 1986. "The Theory of Preferential Trading Arrangements." *Weltwirtschaftliches Archiv* 122(3):439-464.
- Pomfret, R. 1988. *Unequal Trade: The Economics of Discriminatory International Trade Policies*. Oxford: Basil Blackwell Ltd.
- Resources International. 2005. OECS Market Access Study. Antigua.
- Robson, P. 1980. *The Economics of International Integration*. London: George Allen & Unwin.
- Rodriguez, F. and D. Rodrik 2000. "Trade Policy and Economic Growth: A Skeptic's Guide to Cross-National Evidence. In B. Bernanke and K. Rogoff. eds. *Macroeconomics Annual 2000*. Cambridge, MA, NBER. pp.261-325.
- Sachs, J.D., A. Warner, A. Aslund and S. Fischer. 1995. "Economic Reform and the Process of Global Integration." *Brookings Papers on Economic Activity* 1995(1):1-118.
- Sandberg, H.M. 2003. "The Evolution of the Gravity Model." Unpublished, University of Florida, Gainesville.
- Sandberg, H.M., J.L. Seale, T.G. Taylor and P. Antoine. 2006. "History, Regionalism and CARICOM Trade: A Gravity Model Analysis." *Journal of Development Studies* 42(5): 795-811.

- Santos-Paulino, A.U. 2005. "Trade Liberalization and Economic Performance: Theory and Evidence for Developing Countries." *The World Economy* 28(6):783-821.
- Sawyer, W.C. 1984. "The effects of the Second Enlargement of the EC on U.S. Exports to Europe." *Weltwirtschaftliches Archiv* 120:572-579.
- Sawyer, W.C. and R.L. Sprinkle 1989. "Alternative Empirical Estimates of Trade Creation and Trade Diversion: A Comparison of the Baldwin-Murray and Verdoorn Models." *Weltwirtschaftliches Archiv* 126:61-73.
- Schiff, M. 2002. "Regional Integration and Development in Small States." Policy Research Working Paper No.2797, The World Bank, Washington, D.C.
- Soloaga, I. and L.A. Winters 2001. "Regionalism in the Nineties: What Effect on Trade." *North American Journal of Economics and Finance* 12(1):1-29.
- Stevens, C. and J. Kennan 2005. "Preparing for Economic Partnership Agreements Trade Analysis Handbook." Institute of Development Studies, University of Sussex, Brighton.
- Stotsky, J., E. Suss, and S. Tokarick. 2000. "Trade Liberalization in the Caribbean." *Finance & Development* 37(2):22-25.
- Tinbergen, J. 1962. *Shaping the World Economy: Suggestions for an International Economic Policy*. New York: The Twentieth Century Fund.
- Vamvakidis, A. 1999. "Regional Trade Agreements or Broad Liberalization: Which Path Leads to Faster Growth?" *IMF Staff Papers* 46(1):42-68.
- Verdoorn, P.J. 1960. The Intra-Block Trade of Benelux. In E. A. G. Robinson ed. *Economic Consequences of the Size of Nations*. London: Macmillan & Co.
- Viner, J. 1950. *The Customs Union Issue*. New York: Carnegie Endowment for International for International Peace.
- Wacziarg, R. and K.H. Welsh. 2000. "Trade Liberalization and Growth: New Evidence. Working Paper no. 10152, National Bureau of Economic Research, Washington, D.C.
- Wainio, J. and P. Gibson 2003. "The Significance of Nonreciprocal Trade Preferences for Developing Countries. Agricultural Policy Reform and the WTO: Where Are We Heading?" Capri, Italy.
- Weisbrot, M. and D. Baker. 2002. The Relative Impact of Trade Liberalization on Developing Countries. Center for Economic Policy Research Briefing Paper, Washington, D.C.
- Winters, L.A. 1996. "Regionalism versus Multilateralism." Policy Research Paper No.1687 World Bank, Washington, D.C.

- Winters, L.A. 2000. "Trade Policy as Development Policy: Building on Fifty Years' Experience." High-level Round Table on Trade and Development: Directions for the Twenty-first Century, Bangkok, UNCTAD.
- Winters, L.A. 2004. "Trade Liberalisation and Economic Performance: An Overview." *The Economic Journal* 114:F4-F21.
- Wolf, S. 2002. "From Preferences to Reciprocity General Equilibrium Effects of a Free Trade Area Between The EU and the UEMOA." Third Annual Conference on Global Economic Analysis, Bonn, Germany.
- World Bank. 2005a. "Organization of Eastern Caribbean States: Toward a New Agenda for Growth." Report no. 31863-LAC, The World Bank, Washington D.C.,
- _____. 2005b. "A Time to Choose: Caribbean Development in the 21st Century." Report no. 31725-LAC, The World Bank, Washington, D.C.
- _____. 2006. World Development Indicators Online. Web Accessed: <http://devdata.worldbank.org.lp.hscl.ufl.edu/dataonline/> May 16, 2006.

BIOGRAPHICAL SKETCH

Max M. Grunbaum Nagiel was born in Cochabamba, Bolivia on July 24, 1966. He received a Bachelor of Science in Economics from St. John's University in 1989. He also earned a Master of Arts in Latin American Studies and a Master of Science in Food and Resource Economics at the University of Florida in 1993. He was an adjunct lecturer and businessman in Santa Cruz, Bolivia for a number of years.

In 2003 he returned to the Food and Resource Economics Department to pursue a Ph.D. During this time he was a teaching and research assistant in the department. Max completed his degree in 2007.