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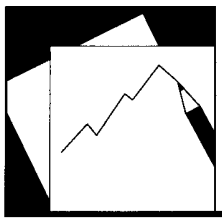

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Central America, Panama, and the Dominican Republic: Trade Integration and Economic Performance

Stephanie Medina Cas, Andrew Swiston, and Luis-Diego Barrot

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Western Hemisphere Department

Central America, Panama, and the Dominican Republic: Trade Integration and Economic Performance

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Abstract

This paper studies the potential for the export sector to play a more important role in promoting growth in Central America, Panama, and the Dominican Republic (CAPDR) through deeper intra-regional and global trade integration. CAPDR countries have enacted many free trade agreements and other regional integration initiatives in recent years, but this paper finds that their exports remain below the norm for countries of their size. Several indexes of outward orientation are constructed and suggest that the breadth of geographic trading relationships, depth of integration into global production chains, and degree of technological sophistication of exports in CAPDR are less conducive to higher exports and growth than in fast-growing, export-oriented economies. To boost exports and growth, CAPDR should implement policies to facilitate economic integration, particularly building a customs union, harmonizing trade rules, improving logistics and infrastructure, and enhancing regional cordination.

JEL Classification Numbers: F13, F14, F15, F43, O11

Keywords: Exports, Integration, Central America, Free trade agreements, Economic growth, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, Panama

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I. Introduction and Summary

This paper assesses the potential for the export sector to play a larger role in promoting economic growth in Central America, Panama, and the Dominican Republic (CAPDR) through increased intra-regional and global trade integration.[2] CAPDR has grown in recent decades, but while there has been considerable variation across countries, on average growth has been lower than in comparator countries, and it is expected to continue to be modest in most countries in upcoming years. In this context, Swiston and Barrot (2011) found that CAPDR has significant scope to raise growth through supply-side reforms—especially reforms to the domestic financial system and key product markets. While the authors found that CAPDR countries rank relatively well in terms of *de jure* external openness (tariff rates and explicit restrictions on transactions), this paper expands their analysis by examining empirically CAPDR's outward orientation—the extent to which the export sector is a driver of long-term growth—to ascertain areas for improvement.

CAPDR countries have actively pursued trade agreements and other regional integration projects in the last decade, but there is still much on the agenda. There has been substantial progress on bilateral and multilateral trading arrangements (MTA's), including entry into force of the Dominican Republic-Central America-United States Free Trade Agreement (CAFTA-DR) in 2006–2009 and the signature in June 2012 of an Association Agreement (AA) with the European Union (EU). Implementation of regional projects to improve transportation and electricity linkages has also accelerated. Import tariffs have been substantially reduced, helping to spur trade both within and outside of the region, but implementation of policies that would support trade more broadly has lagged, such as investing in infrastructure, creating a customs union, and harmonizing regulations. While the full impact of recent initiatives will only materialize over a period of decades, this report takes stock of their status, describes the benefits and challenges they could bring, and identifies priorities for further progress.

The indexes of outward orientation developed in this paper suggest that CAPDR's export sector is less favorably positioned to support long-term economic growth than similar countries in other regions. Overall exports-to-GDP ratios have hit a plateau since their peak in the late 1990's, while trade in comparable countries in other regions is both higher than CAPDR and has continued to increase. A long time series of highly-detailed data on trade by product and partner is used to construct indexes of outward orientation for over 160 countries, which facilitates analysis of the composition of exports across countries and over time. The indexes cover the geographic scope of trading relationships, involvement in global production chains, and technological sophistication of exports, three concepts that the literature has emphasized are important for economic growth. The indexes show that CAPDR countries have increased their participation in global production chains and the sophistication

[2] Central America (CA) refers to Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua.

of their exports, but continue to lag other trade blocs like the EU and members of the Association of Southeast Asian Nations (ASEAN). In addition, CAPDR could increase exports by penetrating the substantial untapped markets for the products that CAPDR already exports.

The paper finds a strong link between the indexes of outward orientation and both exports and economic growth, underscoring the potential benefits to CAPDR of efforts to deepen integration. An empirical model finds that trade logistics and outward orientation are among the key determinants of exports to GDP across countries. The analysis finds that CAPDR's exports would be 10 to 20 percent of GDP higher if its logistics and outward orientation were at the levels of large Latin American countries, ASEAN, or the EU. Using a dynamic panel model, the paper finds that outward orientation is also a driver of economic growth. Growth in CAPDR economies could be higher by an average of 0.8 to 1.6 percent per year if its export sector were as dynamic as these comparator regions.

This paper has six sections: Section II describes CAPDR's historical growth performance and the medium-term growth outlook. Section III discusses implementation of regional integration initiatives and highlights areas for further progress. Section IV presents data on the level and composition of the region's exports, constructs indicators of outward orientation, and compares CAPDR's indicators to those of other regions. Section V estimates models of exports to GDP and economic growth and illustrates CAPDR's potential for improvement if policies to facilitate trade were implemented. Section VI concludes.

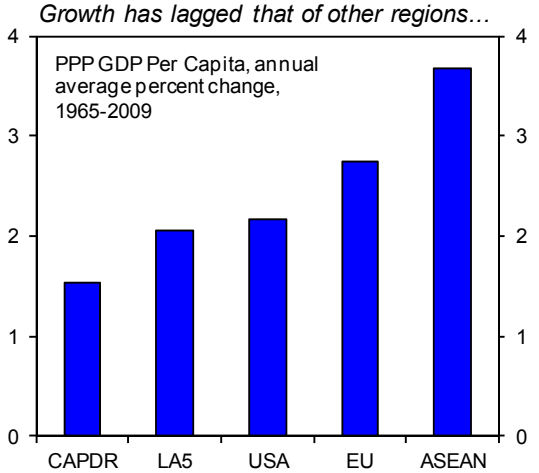
II. Historical and Prospective Economic Performance

From a long-term perspective, living standards in CAPDR have risen, but the income gap with advanced economies has not changed significantly. Real GDP per capita at purchasing power parity (PPP) has more than doubled since 1960, but the gap with the United States or the EU has not been reduced (Figure 1). Among other emerging markets, ASEAN members were less wealthy than CAPDR in the 1960's, but have grown rapidly and now have a per capita income twice as high as CAPDR, while even large Latin American (*LA5*) economies have grown slightly faster.[3] Income per capita in CAPDR as a whole declined to 16 percent of the U.S. level in 2005–2009, from 19 percent in the early 1960's, despite growth in the Dominican Republic and Panama of about 3 percent per year over that period.

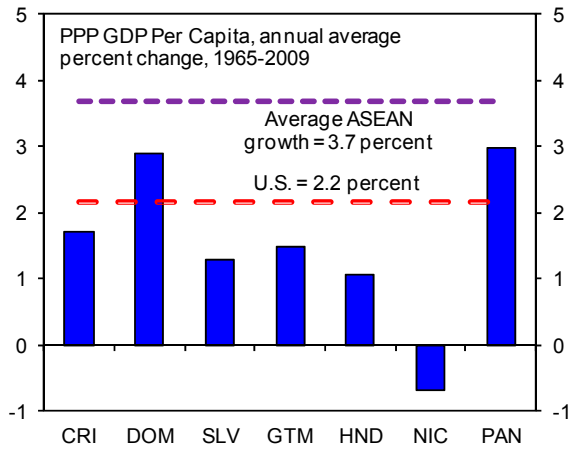
[3] ASEAN members with PPP GDP data since 1960 are Indonesia, Malaysia, the Philippines, Singapore, and Thailand. Cambodia, Laos, and Vietnam are included in calculating the region's growth rate when their data begins in 1970. The LA5 are Brazil, Chile, Colombia, Mexico, and Peru. Regional figures are simple averages of the constituent countries. The countries included in each region are listed in Table A.1 in Appendix I.

Figure 1. Economic Growth in CAPDR

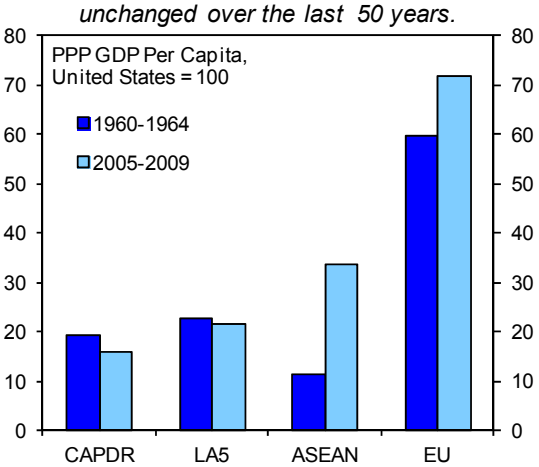
Growth has lagged that of other regions...



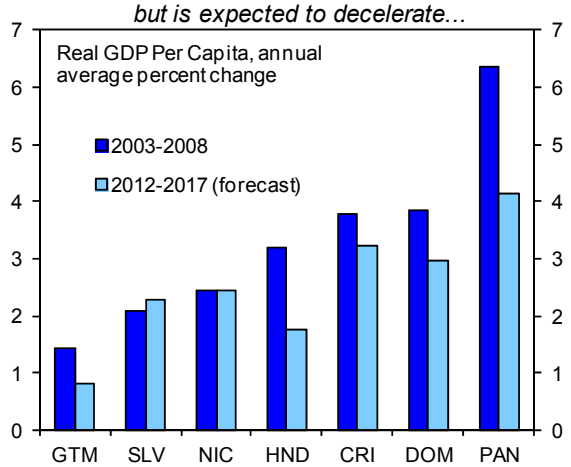
...outside the Dominican Republic and Panama...



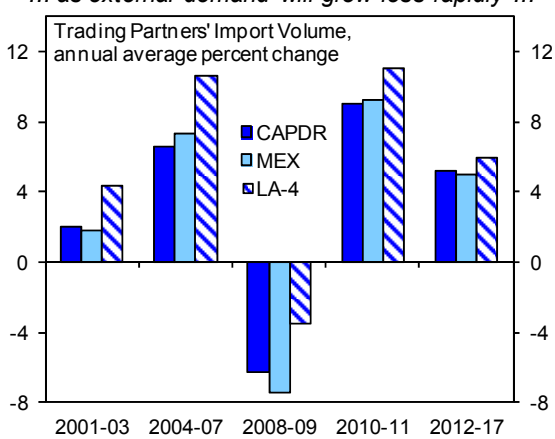
...leaving relative incomes broadly unchanged over the last 50 years.



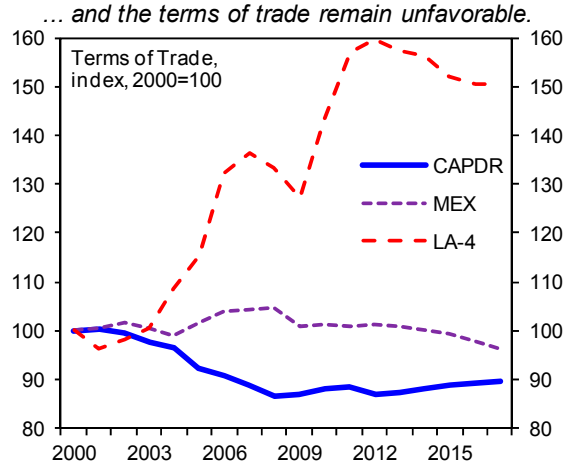
Growth was buoyant before the global crisis, but is expected to decelerate...



... as external demand will grow less rapidly ...



... and the terms of trade remain unfavorable.

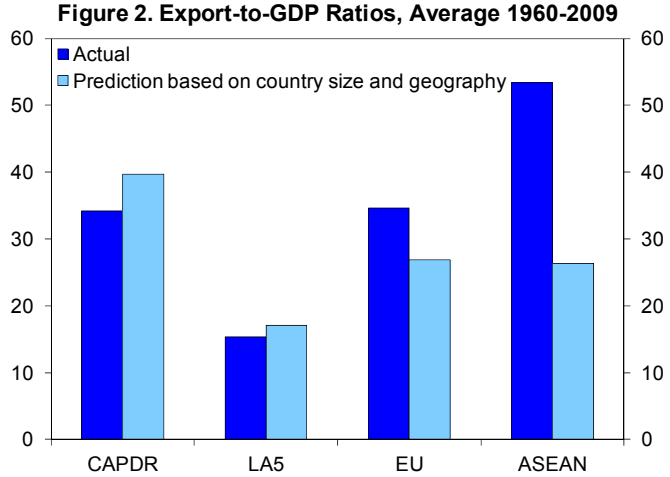


Growth in the coming years is expected to moderate compared to the pre-crisis period. Growth was buoyant during the global boom years (4 percent per year from 2004–2007), though it remained lower than in other emerging markets (5 percent in the LA5 and 6 percent in ASEAN). Real GDP growth forecasts of IMF staff for 2012–17 suggest that this acceleration was temporary for the majority of economies in the region, and, while growth will continue to vary across countries, in most cases it is expected to decelerate to more typical pre-boom growth rates in the years ahead (Figure 1).[4] These forecasts imply a continued slow rate of convergence in most of the region.

This reflects, in part, a reversion to less buoyant external demand and unfavorable terms of trade. Growth of external demand is projected to remain below that experienced during the boom years and below that of most South American countries (Figure 1), as CAPDR trades far more with the United States than with fast-growing Asian economies. Similarly, while the prices of some key agricultural exports have increased since 2007, they have been more than offset by higher prices for petroleum and other raw materials imports, such that the overall terms of trade deteriorated substantially in the 2000's. The terms of trade are not expected to improve substantially from current levels, weighing on growth in CAPDR while benefitting the resource-intensive economies of South America.

One potential factor in the long-term growth performance of CAPDR countries is that they have been relatively less open than other small countries. Exports-to-GDP ratios tend to be higher in smaller countries as, given the absence of a sizable domestic market, producers take advantage of economies of scale through international trade. Studies have found a link between small country size and high openness (Alesina and Wacziarg, 1998), and have also suggested that openness substitutes for country size in promoting economic growth (Alesina, Spolaore, and Wacziarg, 2000 and 2004). The outward orientation of CAPDR countries over the last half century has been below that of the typical small country, as a regression of exports to GDP on country size shows that CAPDR's exports have been below the norm for countries of its size, while those of ASEAN and the EU have been above the norm (Figure 2).[5]

Figure 2. Export-to-GDP Ratios, Average 1960-2009

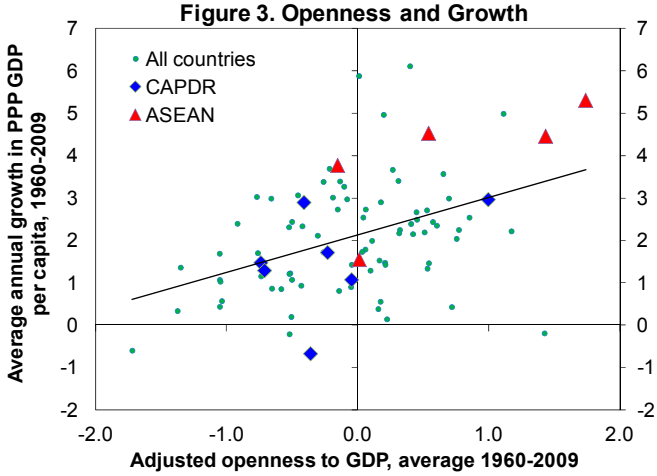


[4] Note this data is not in PPP terms because there is no forecast of real GDP in PPP terms. Hence it is not strictly comparable to the other figures.

[5] The regression predicts the ratio of exports of non-oil goods and services to GDP using population, land area, and dummies for island or landlocked countries. Section V provides more details on the model.

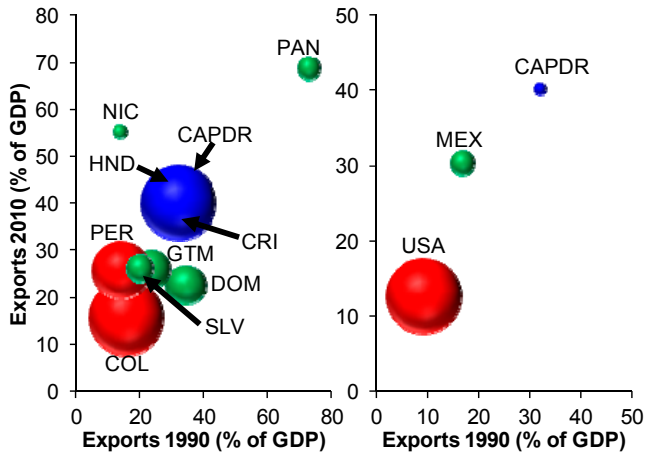
Cross-country experience suggests that raising exports could play an important role in boosting long-term growth. There has been a strong correlation over the last half-century between countries with high economic growth and their openness as proxied by the deviation of non-oil exports from the predicted value in the above model (Figure 3). This suggests that CAPDR's economic performance could improve with a more dynamic outward orientation.

Figure 3. Openness and Growth



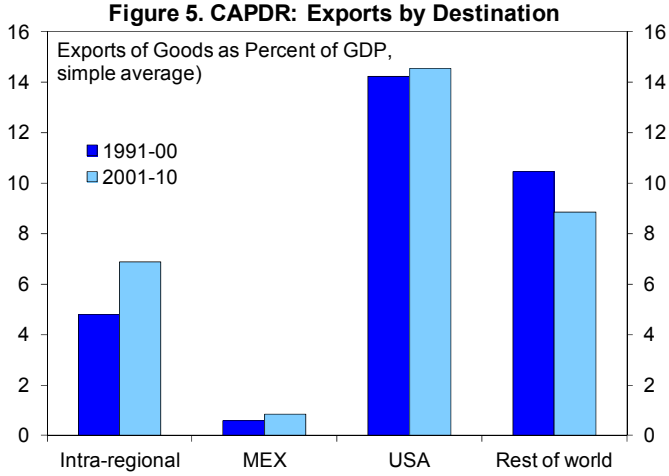
In this context, spurring export growth would require deepening intra-regional integration and establishing new trade relationships outside the region. Deeper intra-regional integration would allow the combined market to take advantage of economies of scale and could spur investment, exports, and growth. Taken together, the CAPDR economies would be about the size of Colombia or Peru, making them a more attractive destination for potential investment (Figure 4). However, even as a combined market CAPDR would be a fraction of the size of the U.S. and Mexican economies, underscoring the importance of integration with major economies nearby. CAPDR's trade links with the United States are strong, but trade with Mexico is very low given its proximity and economic size, suggesting that there could be unexploited opportunities for deeper integration. In addition, CAPDR has not expanded its trade links with the rest of the world over the last decade, pointing to the need to broaden trading relationships outside the region (Figure 5).

Figure 4. Economic Size and Outward Orientation 1/



1/ The relative size of the bubble corresponds to the size of the economy in terms of PPP GDP.

Figure 5. CAPDR: Exports by Destination



III. Trade Integration Agreements and Regional Initiatives

Following substantial work towards regional trade integration over the last half century, in recent years CAPDR has emphasized multilateral initiatives that underpin integration with the rest of the world. This section reviews their implications for trade, and the benefits and challenges that they bring.

The main MTA's and initiatives promoting regional integration include: [6]

The **Central American Common Market (CACM)** began in 1960 and includes Costa Rica, Guatemala, Honduras, El Salvador, and Nicaragua, with Panama expected to join in 2012. It aims to create a free trade area for goods through tariff elimination for the member countries, establish a common external tariff, create a customs union, and eliminate non-tariff barriers to trade through harmonizing trade regulations.

CAFTA-DR, the free trade agreement that includes the five CACM countries, and adds the Dominican Republic and the United States, came into force upon ratification in signatory countries between 2006 and 2009. Panama and the United States have also signed a free trade agreement that will enter into force in October 2012. CAFTA-DR aims to establish a free trade area for goods, and extends liberalization to services and other areas important for trade, such as investor protection. It aims to reduce tariff and non-tariff barriers, including through boosting the transparency and efficiency of customs.

The **EU-Central America Association Agreement (AA)** was signed in June 2012. It includes CAPDR and the 27 EU countries. It still needs to be ratified by the legislatures of CAPDR countries and the European Parliament before it is implemented. The AA aims at creating a free trade area in goods and services through a reduction of tariffs and non-tariff barriers, and seeks to reinforce cooperation in customs to promote regional integration in CAPDR. The agreement also extends into other important trade-related areas, such as intellectual property rights and competition policy.

The **free trade agreement between Mexico and the five CACM countries** was signed in late 2011. It has to be ratified by the national legislatures before implementation. It will replace the bilateral trade agreements Mexico has with Costa Rica, El Salvador, Guatemala, and Honduras.

The **Mesoamerican Project**, launched in 2008, aims to improve regional infrastructure and trade logistics. It includes CAPDR, Belize, Colombia, and Mexico (Box 1).

[6] For more details on the objectives and impact of the CACM, CAFTA-DR, and EU-CA AA, see Appendix II. Other international trade agreements in existence or under negotiation in CAPDR are listed in Appendix III.

Box 1. Mesoamerican Project

The Mesoamerican Project (MP) replaced the Plan Puebla-Panama (PPP), which had limited success in developing regional projects in the region. The PPP was launched in 2001 by CA and Mexico as a regional initiative to promote economic development. However, it had mixed results when it came to securing financing and building consensus for regional projects (IDB, 2008), though it made strides in customs, energy, and transport. The MP, launched in June 2008, incorporated finance ministers into its institutional framework and established guidelines for the approval of new projects.

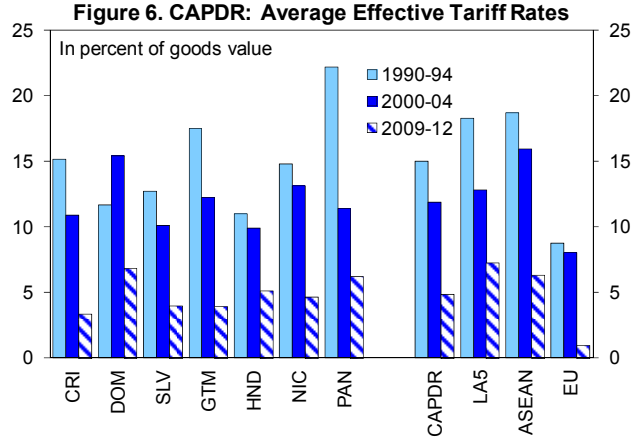
The MP aims to improve and integrate infrastructure, transport, and trade logistics in the region under the Mesoamerican Multimodal Transportation System. Key projects include:

- **The construction of a regional highway network, the International Network of Mesoamerican Highways,** including the redevelopment of the Pacific corridor from Mexico to Panama into a "five-star highway" and the main logistics corridor for transport in the region by 2020. This route is made up of 3,244 kilometers of highway and transports 95 percent of the commercial goods of the region. The project was launched in mid-2009 and in 2011 the IDB and national authorities prepared the US$2.3 billion investment program for construction of infrastructure and security. In December 2011, the heads of state approved the establishment of a management committee which will be in charge of exploring financing options and of executing the project.
- **The International Land Transit of Goods (TIM) project to facilitate and reduce the costs of transporting goods through customs and border crossings.** The project, which aims at improving and harmonizing information technology systems and customs transit procedures to reduce the time trucks take at crossing borders in transit, has been implemented at all the border crossings along the Pacific corridor.
- **The Short Distance Sea Transport project that aims to develop and modernize maritime transport in the region.** It was launched in 2009 under the coordination of Panama's Port and Maritime Authority, with the support of the Central American Commission of Maritime Transport. With financing from the IDB and Panama's Port and Maritime Authority, an 18-month technical assistance project began in October 2011 and is evaluating the state of all the ports in the region.

Another objective of the MP is to push forward energy integration in the region with the development of a regional electricity market. The flagship project is the Central American Electrical Interconnection System (SIEPAC) which consists of the construction of a 1,800 kilometer transmission line from Panama to Guatemala. As of early 2012, 90 percent of the SIEPAC's construction was completed and 50 percent of the transmission lines were operating. The project will be completed in May 2013. The electrical interconnection line between Mexico and Guatemala was completed in 2009.

The CACM has made advances in promoting intra-regional trade through tariff reductions but progress has been slower in harmonizing trade regulations and building a customs union. Only a few products (including coffee and sugar) are not traded freely in the region, and a majority of products have a common external tariff. Overall, tariffs have declined significantly in recent years (Figure 6) and there have been advances in harmonizing technical rules on trade and customs regulations. Nonetheless, non-tariff barriers remain an obstacle to trade in the region, particularly in the area of sanitary and phytosanitary (SPS) regulations. Moreover, there is still no integrated or common customs system and although countries continue to work towards this gradually, often national legislation has not been harmonized to regional rules. Guatemala and El Salvador signed an agreement in 2008 to create a customs union, but progress has been slow.

Figure 6. CAPDR: Average Effective Tariff Rates



CAFTA-DR should facilitate the region's access to the U.S. market. It expands and makes permanent the bilateral trade preferences formerly extended unilaterally by the United States under the Caribbean Basin Initiative.[7] Duties were eliminated on most goods immediately and the remaining products will have tariffs phased out over five to twenty years, depending on the product and country. Central American countries have a significantly larger number of products under gradual phase-out of tariffs than the United States, particularly for sensitive agricultural products, to allow more time for domestic producers to adjust to U.S. competition, while those goods protected under the CACM are not subject to liberalization. CAFTA-DR introduced new rules of origin (or cumulation of origin) that apply the same favorable tariff treatment to inputs and value-added in production from any member country, thus encouraging co-production arrangements across countries (González, 2005; Jaramillo and Lederman, 2006).[8] For some manufactured goods, duty-free inputs will be allowed from certain third countries. These rules foster vertical integration of production chains. In addition, CAFTA-DR secures for its members market access for cross-border services, including telecommunications, finance, and tourism, and requires the regulatory authorities in Central American countries to improve transparency. The agreement also aims

[7] The Caribbean Basin Initiative (CBI) was a unilateral and temporary United States program initiated by the 1983 "Caribbean Basin Economic Recovery Act". The CBI came into effect on January 1, 1984 and aimed to provide several tariff and trade benefits to many Central American and Caribbean countries.

[8] Rules of origin define the geographic origin of goods based on where the product was made or on where the last substantial transformation occurred in the production of the good. They determine the trade or tariff preferences that apply to a particular good.

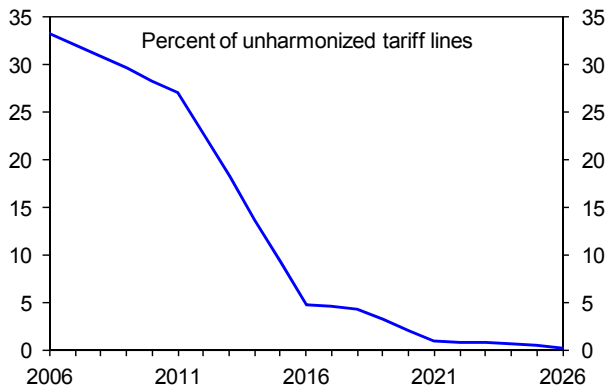
to reduce technical barriers to trade (TBT), including by providing technical assistance for SPS issues; liberalizes government procurement; enhances intellectual property and investment rights; and addresses enforcement of competition, labor, and environmental standards.

The AA with the EU will enhance links between the two regions, while reinforcing regional integration within Central America. The AA will make permanent the zero tariffs Central American exporters already have under the Generalized System of Preferences (GSP+), and extends these to bananas, raw cane sugar, and shrimp. The agreement will largely eliminate tariffs for manufactured goods, fisheries, and agriculture over ten to fifteen years, while certain sensitive agricultural products will remain protected. The agreement has rules of origin that allows members to use inputs from other members and share production in the elaboration of goods. Like CAFTA-DR, the AA intends to boost integration by developing harmonized trade regulations moving towards international standards in customs, and offering technical assistance to do so. In addition, it attempts to promote regional integration by aiming to introduce a single customs declaration and duty for the region and a regional competition authority.

Despite this progress, challenges to trade integration persist, including problems with external tariff harmonization, complex and unharmonized regulations, inadequate infrastructure and logistics, and lack of coordination among customs administrations.

A significant amount of tariffs are not harmonized. The Secretariat of Economic Integration for Central America (SIECA) states that 95.7 percent of tariff lines are harmonized but this figure is lower because it does not include vehicle lines, the temporary disharmonization of external tariffs under CAFTA-DR (Figure 7), and differences in rules of origin due to different bilateral free trade agreements in the region (de Gavidia, 2011).[9]

Figure 7. Programmed Harmonization of Tariffs under CAFTA-DR



Source: SIECA.

Trade rules can be complicated and vary across CAPDR countries. Rules of origin under CAFTA-DR can be highly complex and hard to apply. For example, determinations for rules of origin can be lengthy, U.S. importers at times have opted to pay tariffs rather than wait for favorable determinations, and sometimes CAFTA-DR exporters do not understand customs procedures (Hornbeck, 2012). TBT persist as not all technical rules have been harmonized and those that have been have not always

[9] Under CAFTA-DR, tariffs temporarily differ by country because individual CA countries negotiated bilaterally with the United States their tariff reduction schedules on sensitive agricultural products.

been applied homogeneously across countries due to capacity problems. Similar SPS problems persist with deficiencies in the administrations of some countries due to a lack of regulations (or lack of harmonization) and technical capacity constraints.

Delays at customs in the region abound because of problems with security, governance, the electronic exchange of information, coordination, low capacity, and inadequate financing. Trade is also hindered by rising rates of crime and violence.

Inadequate infrastructure, particularly in the areas of roads, railroads, ports, and electricity results in CAPDR scoring lower on average on trade logistics compared to other regions and in higher transport costs (Figure 8). Weak logistics is due to low levels of investment spending and maintenance and a lack of coordination between governments in CAPDR. Regional legislation to facilitate transit is also stalled. Although the Mesoamerican Project has made good progress in integrating the distribution of electricity in the region, individual member countries need to boost their supply capability (Guasch, Rojas-Suarez, and Gonzales, 2011).

In light of these challenges, policies should focus on improving infrastructure and logistics, harmonizing trade rules and establishing a customs union, and strengthening regional coordination.

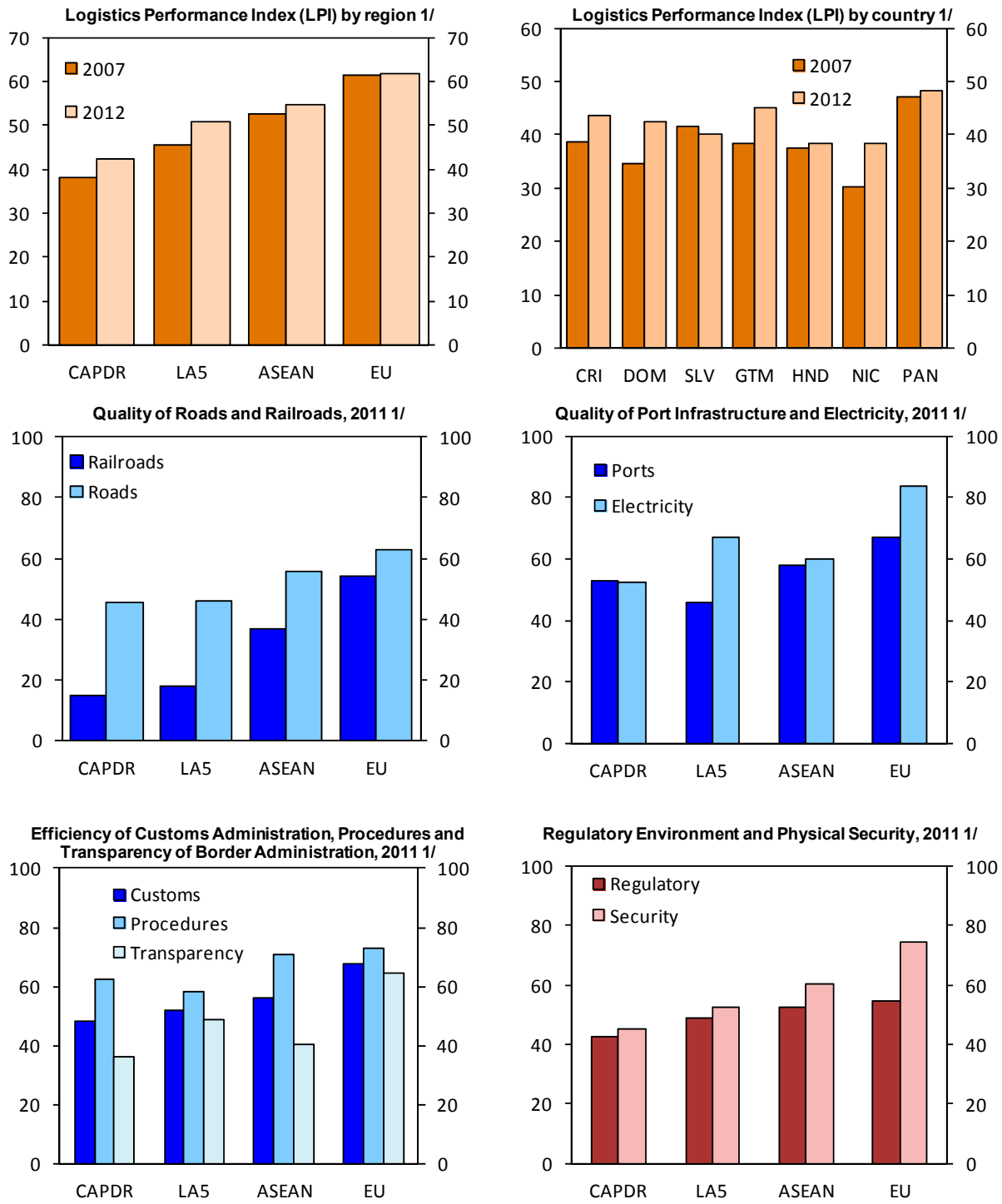
Trade rules, tariffs, and customs union: The remaining trade restrictions on products could be removed; customs requirements, inspection procedures, SPS and other technical standards harmonized; and a common external tariff fully implemented. Efforts should be made to harmonize existing free trade agreements regarding rules of origin and cumulation of origin which would also facilitate vertical integration. More technical assistance and training needs to be provided to officials and firms in order to effectively implement harmonized trade rules, which can be very technical, and to strengthen the tax collection capacity and efficiency of customs administrations. Eventually, to have a full customs union, import tax and tariff rules would need to be standardized and the collection of import duties centralized.

Infrastructure: Construction and maintenance of roads, railways, ports, and electricity should be increased, as public investment in the region only averaged about 4 percent of GDP in 2011. Governments facing financing constraints could utilize public-private partnerships to finance some projects, provided that they are undertaken within sound frameworks that minimize fiscal risks. The Mesoamerican Project should continue to coordinate projects, improve regional transport linkages, and attract financing.

Regional coordination: A regional approach is called for to address these issues, as well as to improve security and governance, particularly in border control and customs administration. Institutions for regional integration should be enhanced and a strategy on integration should be drafted in order to establish common objectives, coordinate efforts, and monitor implementation.

Figure 8. CAPDR: Trade Logistics, Infrastructure, and Customs

Trade logistics in CAPDR have improved but lag behind other regions. The regulatory and security environment are also behind comparators.



1/ rebased to 1-100 scale.

Sources: World Bank; World Economic Forum; and authors' calculations.

IV. The Profile of CAPDR's Exports

This section examines the level and orientation of CAPDR's exports in light of the regional integration initiatives and areas for further progress described above. It finds that while both total and intra-regional exports have risen in recent decades, total exports are lower than in similarly-sized countries in other regions and intra-regional trade is not as high as within some other regional trading blocs. Fast-growing, highly-integrated regions have broadened the geographic scope of their trading relationships, increased participation in global production chains, and raised the technological sophistication of the basket of goods for export, providing lessons for CAPDR countries.

A. Overall Exports of Goods and Services

Exports have gradually become more important for CAPDR economies, now accounting for about 40 percent of GDP on average. Exports have generally been on an increasing trend, rising sharply in the 1990's but then leveling off in the last decade (Figure 9). Exports of goods still predominate, at over 30 percent of GDP, while exports of services have risen steadily to 10 percent of GDP. Panama is the most open country in the region, with exports at 70 percent of GDP (a significant portion is comprised of re-exports from the Colón Free Zone and transportation services related to the canal), while exports are less than 30 percent of GDP in the Dominican Republic, El Salvador, and Guatemala (Figure 10).

Figure 9. CAPDR: Exports to GDP

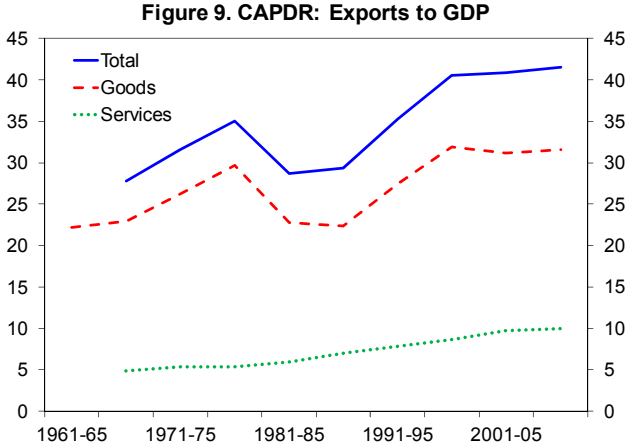
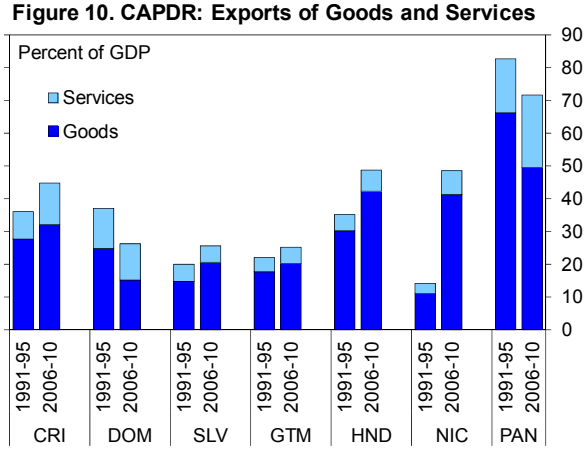


Figure 10. CAPDR: Exports of Goods and Services



However, CAPDR's exports are lower and have risen less quickly in recent years than in countries of similar size in other regions of the world. To focus the comparison on examples that are relevant for CAPDR, the experience of small countries (those with a population of between 1 million and 30 million) in regions that include several emerging markets with per capita incomes close to those in CAPDR is examined—the Association of Southeast Asian Nations (*ASEAN*), the EU, and the Middle East and North Africa (*MENA*). See Table A.1 in Appendix I for a full list of the countries included. Exports in these regions

are higher than those of CAPDR, ranging from 50 percent of GDP for MENA to 100 percent of GDP for ASEAN. Over the last decade, exports have risen faster than GDP in these countries, while CAPDR's exports-to-GDP ratio has been nearly flat (Figure 11).

Figure 11. Exports of Small Countries

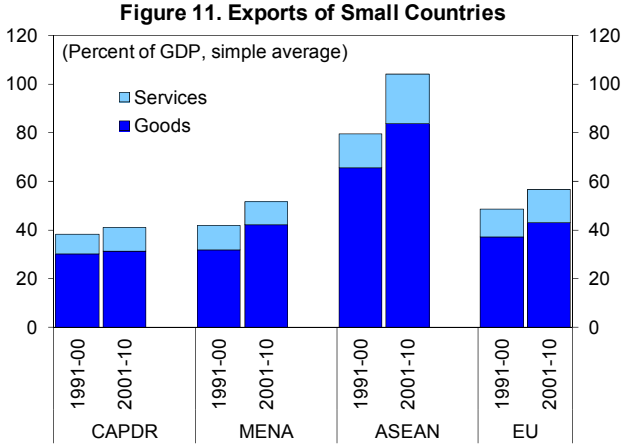
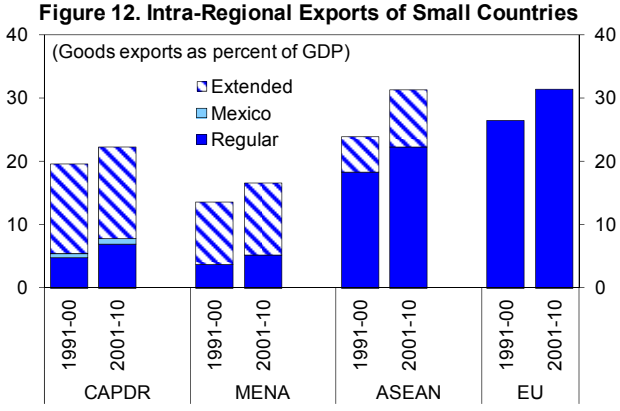


Figure 12. Intra-Regional Exports of Small Countries



Note: Extended regions are USA for CAPDR, JPN and CHN for ASEAN, and EU for MENA.

Intra-regional integration has risen, but the experience of other regions suggests there is room for further increases. Trade within CAPDR amounted to 6.9 percent of GDP on average in the 2000's, up from 4.8 percent in the 1990's. This is well behind small ASEAN and EU countries (Figure 12). It needs to be recognized, however, that the EU comprises a much larger region, which also includes several large countries. For that reason, the comparison was expanded to include the largest economies in close geographical proximity to the other blocs. Thus, for CAPDR the extended region includes the United States and Mexico; for ASEAN, Japan and China; and for MENA, the EU. CAPDR's exports improve in this comparison because goods exports to the United States are 14½ percent of GDP on average (though trade with Mexico is less than 1 percent of GDP despite its proximity and economic size). Overall, CAPDR's intra-regional and extended regional trade lags small ASEAN and EU countries, suggesting that there is potential to increase trade integration with its neighbors.

B. Outward Orientation Indexes

To summarize a country's degree of integration and qualitative aspects of its goods exports, three indexes capturing aspects of outward orientation were calculated.[10] Various analysts have found these aspects to be beneficial to development. An overall index of outward orientation was then calculated by taking the product of these indexes. The three indexes are:

[10] Services could not be included because there is no data on bilateral trade in services. See Appendix I for details on the calculation of these indexes.

Market Penetration Index: Brenton and Newfarmer (2007) found that countries with dynamic exports were often set apart by their penetration of a high proportion of global markets for their products. They found that high 'birth rates' of individual export relationships are less important determinants of market penetration than low 'death rates'. This reflects the ability of exporters to sustain trade relationships over time, which helps drive higher export growth at the country level. The market penetration index (MPI) represents the share (on a scale of 0 to 100) of world import markets in which a country participates, weighted by its export basket. The MPI first calculates for each product the imports of each country as a proportion of the global imports of that product.[11] For each exporter, it sums for each product the import shares of the countries it exports to. The overall MPI is the weighted average across products based on each product's importance in that country's export basket.

Vertical Integration Index: This measures intra-industry trade in a manner similar to Grubel and Lloyd (1971), capturing the extent to which the product categories of a country's imports overlap with those of its exports (on a scale of 0 to 100). A higher value of the index seeks to capture greater involvement in global production chains in which a small transformation is performed on imported inputs before they are exported. This trade can have benefits in terms of technology transfer, product discovery, taking advantage of niches in which a country has a comparative advantage, and entry into broad networks of trade relationships (Brenton, Newfarmer, and Walkenhorst, 2009). Grubel and Lloyd (1971) summed intra-industry trade and expressed it as a share of the sum of exports and imports, adjusting the result for any overall trade imbalance. Given this paper's focus on exports, intra-industry trade is calculated as a share of exports, with no trade imbalance adjustment.

Product Sophistication Index: This paper follows Hausmann, Hwang, and Rodrik (2007) to construct export sophistication indexes by assigning a productivity score to each product based on the average income level (GDP per capita at PPP) of the exporters of that product. This is justified by the tendency of high-income countries to specialize in more sophisticated high-technology products, which supports their higher average wages and reflects their higher average productivity levels. Aggregating these scores across the export basket of a given country yields a measure of the sophistication of that country's exports.[12] The authors found the sophistication indexes to be positively related to higher rates of economic growth across countries.

These indexes were calculated using a long time series of highly-detailed data broken down by product and trading partner, with broad geographic coverage. Many studies

[11] Brenton and Newfarmer (2007) calculated MPI's but did not weight them by the import market share of trading partners.

[12] Here, this is expressed relative to the United States, which is equal to 100.

examining detailed trade data have used the World Trade Flows dataset produced by Feenstra and others (2005). This study uses the World Trade Flows dataset and an update and expansion produced by Asmundson (2012). Both these sources draw on the United Nations' COMTRADE database. It extends back to 1962, is based on a highly-detailed product classification spanning over 700 products (SITC2 at the 4-digit level of disaggregation), and covers bilateral trade flows by product between nearly all countries of the world.[13]

These indexes suggest that CAPDR has significant room to improve the geographical and technological composition of its exports. These indexes tend to trend upward over time as trade relationships have multiplied and the degree of processing trade and product sophistication have generally increased (Figure 13). The overall index of outward orientation of EU countries was relatively high in the 1960's and has risen further since the 1990's, coinciding with a period of deepening integration. The graphs also include the Asian Tigers (Singapore from ASEAN along with Hong Kong, Korea, and Taiwan) and show the rapid rise in the outward orientation indexes of these fast-growing countries. CAPDR, the ASEAN countries, and the LA5 had similar overall indexes in the 1960's, but the latter two have climbed since the 1990's, leaving CAPDR behind.

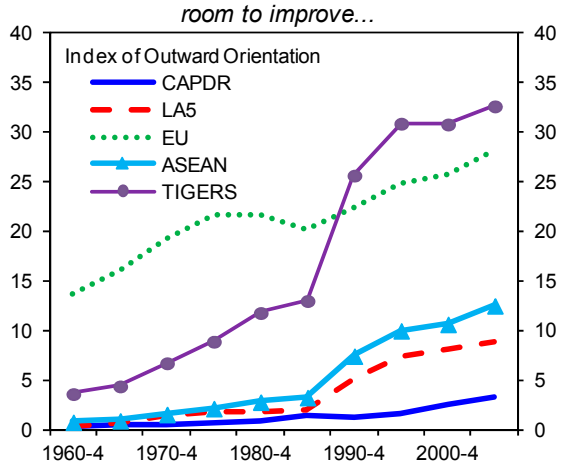
On the geographic side, the market penetration index (MPI) points to substantial opportunities for CAPDR to raise exports by increasing shipments of existing products to new trading partners. The MPI for CAPDR countries is less than 20 on average. In other words, CAPDR ships its products to countries that account for less than 20 percent of global imports of the products that CAPDR exports (as a point of reference, the United States accounted for 15 percent of global imports from 2005–2009 and a similar share in earlier periods). This is significantly less than the LA5, European Union, or ASEAN. Country size does not explain this low penetration, as the MPI's of CAPDR countries are lower than that of countries of similar size in Europe and Asia.

CAPDR economies could also increase integration into global production chains. While an imperfect proxy, the Vertical Integration Index (VII) does seem to reflect the extent of countries' involvement in global processing chains, as export-oriented countries such as the Asian Tigers have among the highest scores. The VII's of CAPDR countries have risen on average since the 1980's and are in line with those of the LA5 and ASEAN, but are much lower than those of the EU. The challenge is to leverage CAPDR's entry into these trading relationships into opportunities to raise the value added of exports by exploiting the transfer of advanced technology and demonstrating comparative advantage in successively more sophisticated industries.

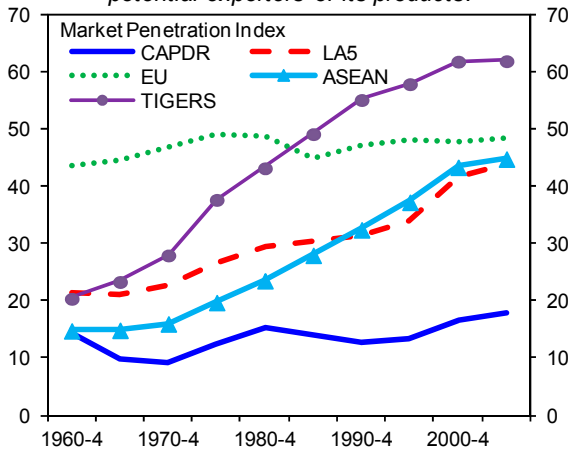
[13] See Appendix I for details on this data.

Figure 13. CAPDR: Assessing Outward Orientation

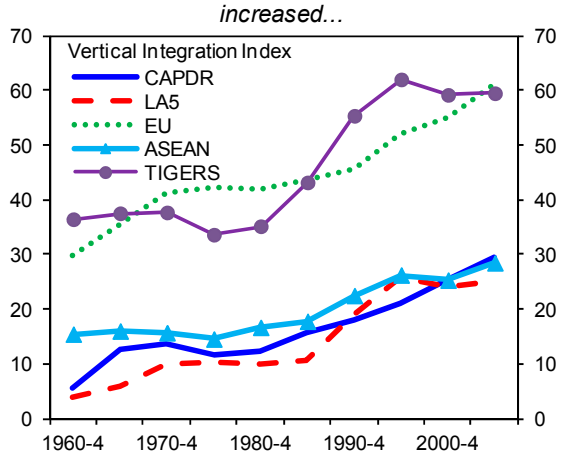
CAPDR's outward orientation has significant room to improve...



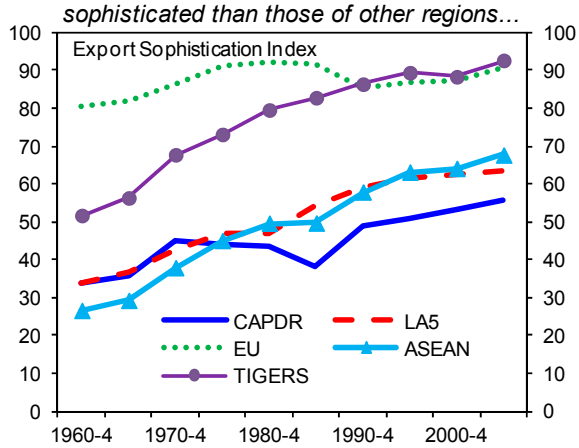
...as it only exports to a small fraction of potential exporters of its products.



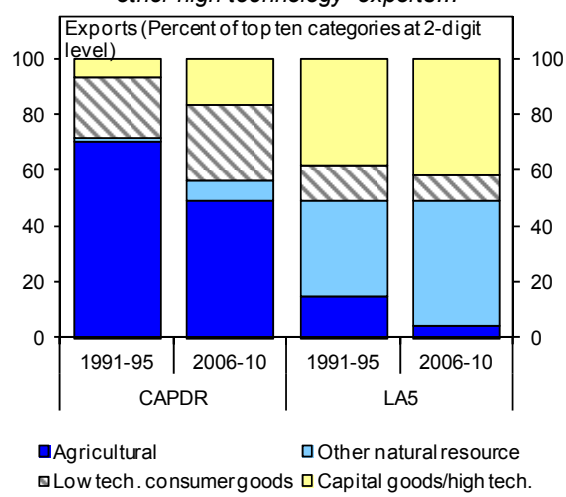
CAPDR's involvement in processing trade has increased...



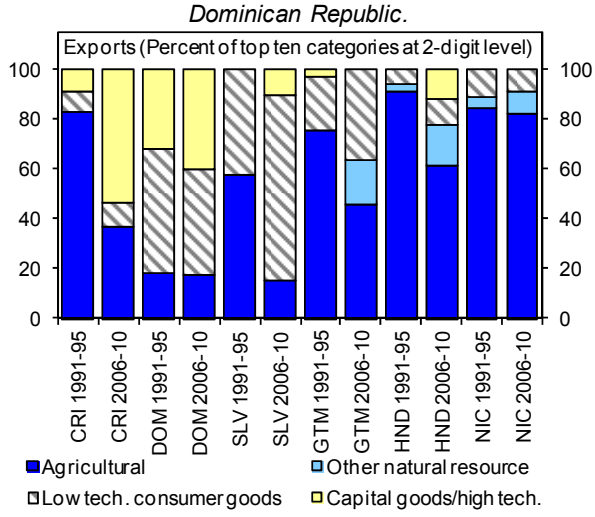
...but its exports remain less technologically sophisticated than those of other regions...



... reflecting the low level of capital goods and other high-technology exports...



...with the exception of Costa Rica and the Dominican Republic.

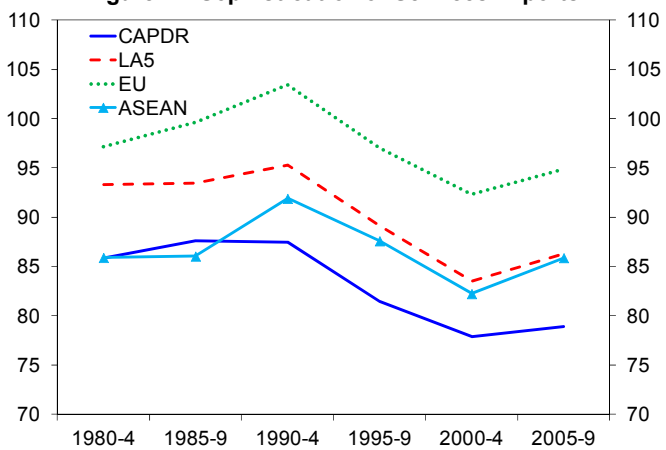


The technological content embodied in CAPDR's exports has increased, but remains lower than that of other regions. While the approach used to calculate Product Sophistication Indexes (PSI's) has its limitations (the United States is a large exporter of grain, for example),[14] there is a high correspondence between a country's PSI and other measures of sophistication such as those contained in the World Economic Forum's Global Competitiveness Index (World Economic Forum, 2011).[15] The sophistication of CAPDR's products has improved gradually over the span of decades, but remains behind the LA5, ASEAN, and emerging market countries in the EU.

CAPDR's low product sophistication ranking is reflected in the preponderance of agricultural products and basic manufactured consumer goods. The share of agricultural goods has declined since the early 1990s, but they remain among the most important products (Figure 13). Most of CAPDR's exports of manufactures are basic consumer goods, as opposed to high-technology products or capital goods. Costa Rica and the Dominican Republic are two relative success stories in this regard, as they have increased exports of capital goods and other high-technology goods.

There is also room to increase the sophistication of services exports. Sophistication indexes for services exports (excluding exports of government services) were calculated following the same methodology as was employed for goods.[16] The time span of the data is shorter and the classification far less detailed, covering only ten categories, which reduces the dispersion of the sophistication indexes across countries compared to those for goods.[17] Nevertheless, the relative rankings both across regions and among CAPDR countries are in line with those for goods. CAPDR's services exports, which are concentrated in travel (which includes tourism) and transportation, are less sophisticated on average than those of

Figure 14. Sophistication of Services Exports



[14] See Minondo (2010) for an analysis of the shortcomings of using this type of measure to proxy for the sophistication of a country's exports.

[15] Seven of the ten countries with the highest export sophistication indexes in 2005–2009 were also among the top ten most competitive countries according to the Global Competitiveness Index.

[16] Mishra, Lundstrom, and Anand (2011) also calculate sophistication indexes for services exports using the Hausmann, Hwang, and Rodrik (2007) approach. As with the PSI's, the services sophistication indexes are expressed relative to the United States = 100.

[17] The categories are transportation, travel (which comprises tourism and business travel), communication, construction, insurance, financial, information technology, royalties and licensing, other business, and personal.

ASEAN, the EU, or the LA5 (Figure 14).[18] Within CAPDR, Costa Rica has made strides in improving the sophistication of its services exports by finding niches in information technology and other business services (such as call centers), and Panama has a relatively more sophisticated mix because of its financial services industry.

V. Outward Orientation and Economic Performance

This section illustrates CAPDR's potential for higher exports and growth by drawing lessons from regions with stronger logistics and a higher degree of outward orientation. Two models are estimated—one relating exports-to-GDP ratios to logistics and outward orientation, and a second relating economic growth to outward orientation. The results underscore the close link between logistics, outward orientation, and growth of exports and economic activity. They show that CAPDR could realize substantial gains by improving trade logistics and enacting policies to widen the scope of its trade relationships, facilitate participation of exporters in global production chains, and encourage innovation and the adoption of more stringent quality standards to improve the sophistication of exports.

A. Exports Model

A substantial proportion of the variation in ratios of exports of goods and services to GDP across countries is explained by country size and geography. More populous countries tend to trade less as a share of their economy because of scale effects (Alesina and Wacziarg, 1998; Alesina, Spolaore, and Wacziarg, 2000). Geographic factors such as country size and landlocked or island status could affect trade ratios through transportation costs. The impact on total exports of natural resource endowments, such as petroleum or precious metals, is unclear. Exports of the natural resource product directly raise total exports, but could lower exports of non-natural resource products by appreciating a country's real exchange rate and reducing the competitiveness of those sectors, such that the overall impact is uncertain. Given the importance of exports of petroleum products for many countries and the ready availability of data, oil exports are included as an explanatory variable in a model of non-oil exports, such that the expected sign is negative.

A model of non-oil exports to GDP with the standard controls finds that country size and income are key determinants. The model estimated here is a modified version of the cross-sectional model used by Alesina and Wacziarg (1998) for overall openness, run on data averaged over five-year periods to minimize cyclical factors.[19] The level of income is lagged

[18] Since the 1990's all regions have lost ground relative to the United States, which is the benchmark value of 100 in all periods, owing to the rising concentration of sophisticated information technology and other business services in U.S. service exports.

[19] Variable definitions and sources can be found in Appendix I. The model is of non-oil exports to GDP, with GDP adjusted by the Penn World Table 7.0 price level in order to value non-tradables consistently across countries. Alcalá and Ciccone (2004) performed the same adjustment for overall openness.

to avoid endogeneity, and the export deflator for each country is included to capture the impact of fluctuations in export prices. Regional dummies are also included. The equation under analysis is:

$$X_i = \alpha + \beta Z_i + \gamma D_i + \varepsilon_i \quad (1)$$

Where *i*'s index countries, *X* is the ratio of non-oil exports to GDP, *Z* is a matrix of explanatory variables, *D* is a matrix of country dummies, and β and γ are the associated vectors of coefficients. Table 1 shows the results for 2005–2009, run on a cross-section of about 100 countries determined by data availability.[20] Column (1), which includes only non-policy variables, shows that, as expected, richer countries tend to trade more and larger countries tend to trade less. The East Asian regional dummy is strongly significant, reflecting the region's strong emphasis on export-led growth, and implies that East Asian countries export about 25 percent of GDP more than countries in other regions with similar characteristics. The European Union dummy is only marginally significant, and other regional dummies, including that for CAPDR, are not significant. Other explanatory variables are not significant and are not shown to save space.

The model finds a strong link between outward orientation and exports. Column (2) adds current account openness and finds a positive impact on exports, as expected, while other results are similar.[21] Column (3) adds the overall index of outward orientation presented in the previous section and shows that it is a significant determinant of exports to GDP. An increase of one standard deviation (15 points on a 100 point scale) is estimated to raise exports by 11 percent of GDP. The statistically significant impact of current account openness is not robust to the inclusion of outward orientation.

Better logistics are also associated with higher exports. Column (4) of Table 1 adds the overall LPI and finds that it is a highly significant determinant of exports. An increase of one standard deviation in the LPI is estimated to raise exports by 12 percent of GDP. The coefficient on outward orientation remains strongly significant and implies that a one standard deviation increase would raise exports by 7 percent of GDP. When controlling for the profile of exports and the quality of logistics, the level of income is no longer a significant driver of exports to GDP. The East Asia dummy is only marginally significant and implies that East Asian countries only export 8 percent of GDP more than similar countries in other regions. These results suggest that much of the observed tendency for richer and East Asian countries to trade more is explained by their better logistics and their more aggressive outward orientation.

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[20] Results for other periods were similar but the table focuses on 2005–2009 since the logistics index is not available for prior periods.

[21] Lagging the openness variable to check for endogeneity concerns did not change the results.

Table 1. The Determinants of Exports to GDP

Dependent variable: log of ratio of non-oil exports of goods and services to GDP, 2005-2009	(1)	(2)	(3)	(4)
Current account openness		0.888**	0.384	0.0398
(index)		[2.175]	[1.007]	[0.0962]
Index of outward orientation			0.330***	0.247***
(log)			[4.069]	[2.872]
Logistics performance index				2.813***
(log)				[3.713]
Lagged income	0.470***	0.419***	0.194**	-0.125
(log of per capita PPP GDP)	[6.261]	[5.479]	[2.124]	[-0.914]
Size	-0.119***	-0.119***	-0.157***	-0.192***
(log of area times population)	[-5.982]	[-6.004]	[-6.578]	[-7.839]
Island	-0.272*	-0.363**	-0.291**	-0.241*
(dummy)	[-1.850]	[-2.611]	[-2.078]	[-1.779]
CAPDR	0.198	0.0595	0.216	0.245
	[0.675]	[0.205]	[0.759]	[0.977]
East Asia	0.968***	1.060***	0.701***	0.409*
	[3.611]	[3.972]	[3.097]	[1.826]
European Union	0.271*	0.169	-0.143	-0.224
	[1.775]	[1.096]	[-0.816]	[-1.313]
Latin America and Caribbean	-0.106	-0.0592	0.0653	0.140
	[-0.439]	[-0.266]	[0.348]	[0.699]
Sub-Saharan Africa	0.335	0.392	0.529**	0.241
	[1.059]	[1.217]	[2.154]	[0.954]
Intercept	0.0245	0.147	1.016	0.510
	[0.00681]	[0.0400]	[0.298]	[0.165]
Other controls: Oil exports, export deflator, landlocked dummy.				
Number of countries	101	101	100	97
Adjusted R-squared	0.546	0.571	0.645	0.743

Notes: The regressions are run on data averaged over the five-year period. Robust T-statistics are in brackets. Variables significant at the 1 percent level are denoted by three asterisks, those at the 5 percent level by two asterisks and those at the 10 percent level by one asterisk.

These results indicate that CAPDR has the potential to substantially boost exports. Applying the coefficients from column (4) of Table 1, the export ratios of CAPDR countries would be higher by 10 percent of GDP, on average, if their logistics and outward orientation levels were comparable to those of the LA5, and 20 percent of GDP higher, on average, if

they were at EU levels.[22] In such a scenario, exports to GDP in CAPDR would exceed those of small MENA countries and be on par with those of small EU countries (Figure 15).

CAPDR's potential for higher exports, especially within the region, is corroborated by other studies. A study employing a different methodology (Marcelo, Stokenberga, and Schwartz, 2010) reaches similar conclusions. Using a gravity model, they estimate that intra-regional trade could double and trade with the United States and EU could increase by a third if adjacency and time-distance factors were improved to EU levels. Indeed, while intra-regional trade would remain below that of small ASEAN and EU countries in such a scenario due to CAPDR's smaller economic size, exports including the extended region would be similar (Figure 16).

Figure 15. Exports of Small Countries

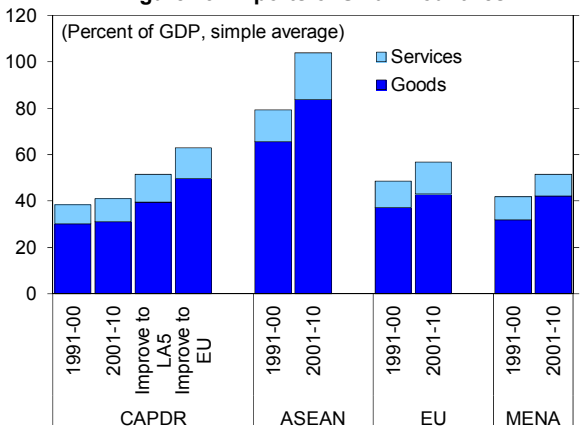
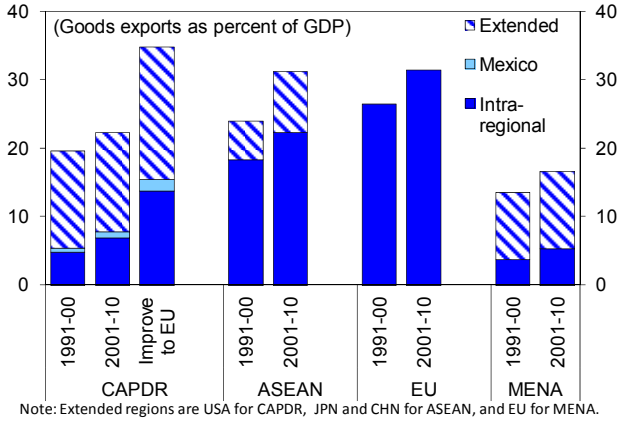


Figure 16. Intra-Regional Exports of Small Countries



Note: Extended regions are USA for CAPDR, JPN and CHN for ASEAN, and EU for MENA.

B. Growth Model

To evaluate how outward orientation affects economic growth, the indexes were added to a growth model including the standard control variables. Swiston and Barrot (2011) estimated a growth model on data since 1960 using System GMM, a dynamic panel method, and applied the results to CAPDR. They found that investment in physical and human capital, macroeconomic stability, demographics, and initial income were significant determinants of long-run growth rates. In addition, structural reforms, as summarized by a battery of 13 indicators, were important. This paper uses the same model but adds the index of outward orientation and each subcomponent in turn, in order to examine which characteristics of goods exports are important for growth.[23]

[22] The hypothetical impact of having the logistics and outward orientation of ASEAN countries is not shown as it lies between those of the LA5 and the EU.

[23] The indexes are expressed relative to the United States = 100 in the regressions in order to minimize non-stationary series. The Logistics Performance Index (LPI) was not included in the model since it is only available

(continued)

Table 2. The Impact of Outward Orientation on Growth

Dependent variable: growth in PPP GDP per capita	(1)	(2)	(3)	(4)
Index of outward orientation	0.691**			
(log)	[2.474]			
Market penetration		2.149**		
(log)		[2.097]		
Vertical integration			0.951***	
(log)			[2.716]	
Product sophistication				2.403*
(log)				[1.792]
Lagged income	-2.165***	-2.365***	-1.711***	-1.629***
(log of PPP GDP per capita)	[-4.808]	[-3.771]	[-4.658]	[-3.757]
Capital formation	2.452***	1.861*	2.735***	3.091***
(log of investment to GDP)	[2.662]	[1.773]	[3.364]	[4.529]
Human capital	0.860**	1.021**	0.847**	0.260
(log of advanced schooling)	[2.188]	[2.083]	[2.008]	[0.512]
Inflation	-2.500*	-1.966	-2.679**	-2.277**
(log of 1 plus inflation rate)	[-1.974]	[-1.424]	[-2.194]	[-1.992]
Structural reforms	4.318**	6.604***	3.724*	4.925***
(index)	[2.104]	[3.233]	[1.724]	[2.848]
Labor force	0.604***	0.655***	0.648***	0.666***
(as share of population, log)	[3.794]	[4.001]	[4.268]	[5.362]
Intercept	6.424	1.479	-0.0761	-8.886*
	[1.168]	[0.314]	[-0.0191]	[-1.905]
Observations	698	698	698	698
Number of countries	79	79	79	79
Number of instruments	23	23	23	23
Hansen test p-value	0.787	0.226	0.743	0.440
AR(2) test p-value	0.425	0.145	0.512	0.523

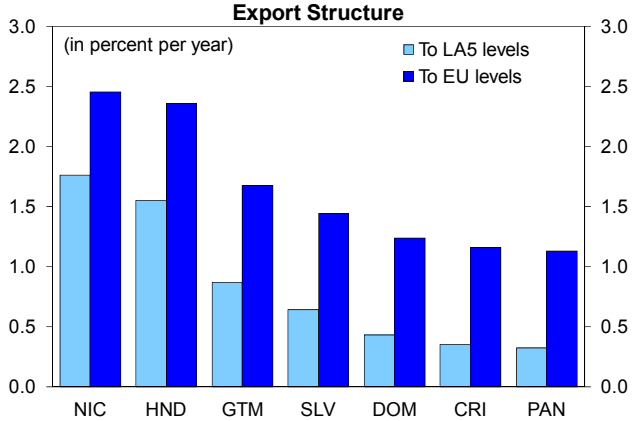
Notes: The regressions are run on data from 1965-2009 in non-overlapping five-year periods. Export structure variables are entered as the log of an index in which the United States equals 100 as a reference value. Time dummies for each period are included but not shown. T-statistics based on Windmeijer (2005) robust standard errors are in brackets. Variables significant at the 1 percent level are denoted by three asterisks, those at the 5 percent level by two asterisks and those at the 10 percent level by one asterisk.

In addition to the usual factors associated with economic growth, the index of outward orientation and its subcomponents are all associated with a significantly higher rate of economic growth (Table 2). The results for the standard variables are in line with those in

for the 2005–2009 period, but the high correlation between the LPI and the index of outward orientation (0.8) suggests that in the panel regressions the latter could pick up some of the impact of logistics.

Swiston and Barrot (2011). The estimated impact of structural reforms remains statistically and economically significant, as do the other factors mentioned above. In addition, the index of outward orientation is found to be a significant determinant of growth. An increase of one standard deviation in the index is estimated to raise the long-run growth rate by 1.3 percentage points. Market penetration and vertical integration are found to be statistically significant and export sophistication marginally significant.[24] The results suggest that these indexes are good proxies for the aspects of a country's outward orientation that are beneficial for economic growth.

Figure 17. CAPDR: Effect on Growth from Improving Export Structure



These results imply that CAPDR should prioritize putting in place the conditions to facilitate broadening the scope of its trading relationships, exploiting niches in global production chains, and enhancing the sophistication of exports. Applying the above results to CAPDR countries suggests that growth would be higher by 0.3 to 1.8 percentage points per year if its export sector were as dynamic as the LA5 and by 1.1 to 2.5 percentage points if it were as dynamic as the EU (Figure 17). Some of the potential gains may lie outside the scope of policy, in natural resource endowments, for example, while others are related to deep-seated structural factors such as the business environment or workforce training. However, the discussion in Section III implies that policies could play a key role, even if the impact were only discernible over the long run.

VI. Conclusions

CAPDR is making substantial progress in pursuing deeper intra-regional and global integration. MTA's with the United States and EU, among others, will likely support exports and economic growth by reducing or eliminating tariffs on most products with key trading partners, introducing cumulation of origin rules that facilitate integration of production across countries, increasing the efficiency of customs administration, reducing non-tariff barriers, and lowering barriers to foreign investment. This should create opportunities for investment, spurring productive linkages across countries, technology transfer, and export sophistication. The Mesoamerican Project's emphasis on improving infrastructure could help the region to capitalize on potential economies of scale and encourage private investment. The IMF has facilitated trade integration in the region, including through providing technical assistance on customs issues and urging countries to raise levels of public infrastructure.

[24] The results on vertical integration do not change if the Grubel and Lloyd (1971) definition of the index is used.

Notwithstanding this progress, cross country experience suggests that CAPDR's export sector could play a more important role in supporting long-term growth. CAPDR's exports have increased, but remain lower than those of similarly-sized economies in other regions. According to the indexes of outward orientation constructed in this paper, the breadth of geographic trading relationships, depth of vertical integration through international trade, and degree of technological sophistication of exports in CAPDR are less conducive to higher exports and growth than in fast-growing, export-oriented economies.

CAPDR's exports and growth could be substantially higher with improved logistics and a more aggressive outward orientation. In particular, the model of exports-to-GDP ratios used in this paper suggests that exports could be 10 to 20 percentage points of GDP higher with improved logistics, a broader geographic scope of trading partners, deeper integration into global production chains, and increased technological sophistication of exports. In addition, our growth model finds that if these conditions were in place, the average CAPDR country could raise its long-term growth rate by 0.8 to 1.6 percentage points per year.

While the full impact of recent initiatives has yet to materialize, these findings underscore the importance of tackling remaining obstacles to integration. Effective implementation of the MTAs is critical for reaping their potential benefits. In this context, policymakers should prioritize building a customs union, harmonizing trade rules, and increasing the capacity of firms and officials to implement these rules. This will require overcoming divergent national legislation and institutional capacity, strengthening coordination, and working within budget constraints. In addition, addressing deep-seated structural issues such as regional infrastructure links, the security situation, and governance will require high-level political coordination and increased funding.

Appendix I. Country Groupings, Data Definitions and Sources, and Formulas

Table A.1. Countries Included in the Analysis

CAPDR	*Estonia*	**Mexico * +**	Cameroon * +
Costa Rica * +	*Finland* * +	Paraguay * +	Congo *
Dominican Republic * +	France * +	**Peru * +**	Cote D'Ivoire * +
El Salvador * +	Germany * +	Suriname *	Ethiopia * +
Guatemala * +	*Greece* * +	Trinidad and Tobago * +	Gabon *
Honduras * +	*Hungary* * +	Uruguay * +	Gambia *
Nicaragua * +	*Ireland* * +	Venezuela * +	Ghana * +
Panama *	Italy * +	*Middle East and North Africa*	Kenya * +
East Asia	*Latvia*		Madagascar * +
Bangladesh * +	*Lithuania*	Algeria * +	Mauritius *
Brunei Darussalam A	Luxembourg	*Armenia*	Mozambique * +
Cambodia * + *A*	Malta *	*Azerbaijan*	Nigeria * +
China * +	*Netherlands* * +	Bahrain *	Rwanda *
Hong Kong SAR * +	Poland * +	Egypt * +	Senegal *
India * +	*Portugal* * +	Iran, I.R. of *	Sierra Leone *
Indonesia * + A	*Romania* * +	Iraq	South Africa * +
Korea * +	*Slovakia*	*Jordan* * +	Sudan *
Lao PDR * *A*	*Slovenia*	*Kuwait*	Tanzania * +
Malaysia * + *A*	Spain * +	*Lebanon*	Uganda * +
Myanmar A	*Sweden* * +	*Libya*	Zambia *
Nepal * +	United Kingdom * +	*Mauritania*	Zimbabwe +
Philippines * + A	*Latin America and Caribbean*	Morocco * +	*Other*
Singapore * + *A*		*Oman*	Albania * +
Sri Lanka * +	Argentina * +	Pakistan * +	Australia * +
Taiwan, P.o.C. * +	Bahamas *	*Qatar*	Canada * +
Thailand * + A	Barbados *	Saudi Arabia	Iceland *
Vietnam * + A	Bolivia * +	Syrian Arab Republic	Israel *
European Union	**Brazil * +**	*Tunisia* * +	Japan * +
Austria * +	**Chile * +**	*United Arab Emirates*	New Zealand * +
Belgium * +	**Colombia * +**	*Yemen*	Norway * +
Bulgaria * +	Ecuador * +	*Sub-Saharan Africa*	Switzerland * +
Cyprus *	Haiti *	Botswana *	Turkey * +
Czech Republic	Jamaica * +	Burkina Faso * +	United States * +
Denmark * +			

Note: Italic font signifies that the country is included in the analysis of small countries in regional trading blocs (population between 1 and 30 million). Bold signifies the Latin America 5. An A signifies ASEAN member. Countries with asterisks were included in the exports to GDP regressions and those with a plus sign were included in the growth regressions.

Table A.2. Data Sources

PPP GDP per capita	Heston and others (2011)
Investment (in PPP terms)	Heston and others (2011)
Educational attainment	Barro and Lee (2010); Cohen and Soto (2007) for countries not contained in Barro and Lee
Inflation (consumer price index)	IMF, *International Financial Statistics* and *World Economic Outlook* databases
Total population and working-age population	United Nations, *World Population Prospects*
Financial system index and subcomponents	Authors' calculations based on detailed data in Abiad and others (2010)
External transactions index and subcomponents	Authors' calculations based on detailed data in Spilimbergo and others (2009); updated tariff data from World Economic Forum (2012)
Product markets index and subcomponents	Authors' calculations based on detailed data in Spilimbergo and others (2009)
Real GDP	IMF, *International Financial Statistics* and *World Economic Outlook* databases; national sources
Trading partners' import volume	IMF, *World Economic Outlook* database
Terms of trade	IMF, *World Economic Outlook* database
Total exports of goods and services	IMF, *International Financial Statistics* and *World Economic Outlook* databases; national sources
Services exports by category	IMF, *Balance of Payments Statistics*
Bilateral exports of goods	IMF, *Direction of Trade Statistics*
Bilateral exports of goods by product	United Nations, *COMTRADE* database, via Asmundson (2012) and Feenstra and others (2005)
Logistics Performance Index	World Bank (various editions)

Description of detailed data on bilateral trade by product

The data were extracted from the United Nations' COMTRADE database. They cover trade by product by partner for up to 275 areas of the world, mostly based on importer-reported data, as Asmundson (2012) and Feenstra and others (2005) found this to be more consistent with other data sources than was exporter-reported data. Data are reported using the SITC2 classification at the four-digit level, covering approximately 700 different products. The data are subject to breaks in the series as the number of reporting countries varies over time (increasing in recent years). Data provided by Asmundson (2012) extends back to 1990, while data back to 1962 as contained in Feenstra and others (2005) were downloaded from http://cid.econ.ucdavis.edu/data/undata/undata.html.

Formulas for Trade Indexes

Let the share of product *i* in the export basket of country *j* at time *t* be given by:

$$EXPSHR_{ijt} = \frac{X_{ijt}}{\sum_i X_{ijt}}$$

Where *X* is exports of each product at the 4-digit SITC level.

Market Penetration Index

Defining *l* as the set of products for which a country has positive exports and *k* as the set of countries to which it exports product *l*, the MPI is given by:

$$MPI_{jt} = \sum_{l} \frac{M_{klt}}{\sum_j M_{jlt}} * EXPSHR_{ijt} * 100$$

This represents the share (on a scale of 0 to 100) of world import markets in which country *j* participates, weighted by the export basket of country *j*.

Vertical Integration Index

For each product, the potential trade related to vertical integration is given by the minimum of exports and imports of that product:

$$VITRADE_{ijt} = min(X_{ijt}, M_{ijt})$$

The vertical integration index (VII) is then given by the total of vertical integration trade over total exports (resulting in an indicator with a scale of 0 to 100):

$$VII_{jt} = \frac{\sum_i VITRADE_{ijt}}{\sum_i X_{ijt}} * 100$$

Product Sophistication Index

Each good is assigned a productivity associated with the per capita PPP GDP of the exporters of that product:

$$PDTY_{it} = \sum_{j} \frac{(EXPSHR_{ijt})}{\sum_j (EXPSHR_{ijt})} * Y_{jt}$$

Where *Y* is per capita PPP GDP and the other notation is the same as already given. The sophistication of the export basket of an economy is thus given by the score of each product weighted by the share of each product in the export basket:

$$SOPH_{jt} = \sum_{i} EXPSHR_{ijt} * PDTY_{it}$$

Index of Outward Orientation

The index of outward orientation multiplies the previous three indexes:

$$BIES_{jt} = \frac{SOPH_{jt}}{SOPH_t^{USA}} * \frac{MPI_{jt}}{100} * VII_{jt}$$

Export sophistication is taken relative to the United States, as the unadjusted index trends upward over time owing to rising PPP GDP levels around the world.

Appendix II. Key Features of Multilateral Trade Agreements Involving CAPDR			
Areas:	**Central American Common Market (CACM)**	**Central American Free Trade Agreement (CAFTA-DR)**	**European Union-Central America Association Agreement (EU-CA AA)**
Member countries	Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua	Costa Rica, El Salvador, Guatemala, the Dominican Republic (DR), Honduras, Nicaragua, and the United States	Costa Rica, El Salvador, Guatemala, the Dominican Republic (DR), Honduras, Nicaragua, Panama, and the 27 countries in the European Union
History and implementation	The CACM was launched in December, 1960 with Guatemala, Honduras, El Salvador, and Nicaragua. Costa Rica joined in July, 1962. Panama is expected to join in 2012.	CAFTA-DR was signed in 2004 and came into force in the U.S., El Salvador, Guatemala, Honduras, and Nicaragua by mid-2006; in the DR in March, 2007; and in Costa Rica in January, 2009.	The negotiations for the AA were concluded in May 2010, and it was signed in June, 2012. It will come into force once it is ratified by the European Council and Parliament, and by each national assembly in Central America.
Single market and product exceptions	**Aim:** Creation of a free trade area for goods for the five member countries of the region, including through the elimination of tariffs. **Details and status:** Largely implemented. The vast majority of goods are traded freely. As of January 12, 2012, only *untoasted coffee and sugar cane* had restrictions in the five member countries, although there are also some bilateral restrictions in specific products (which are allowed under the agreement).	**Aim:** Establishment of a free trade area for goods and services for the seven member countries including the US, including through the elimination of tariffs. **Details and status:** Being implemented. Most products are duty-free or are subject to a tariff elimination schedule, except for *coffee and sugar* and the other products currently excluded from intra-CACM free trade. There are also some exceptions for some of products traded between CACM countries and the DR. Central American countries have a higher number of products than the US under a gradual phase-out of tariffs. *For agricultural products*, there is a separate tariff reduction schedule defined for each country, with some products excluded for entry in a few countries. .	**Aim:** Creation of a free trade area in goods and services for the seven Central American countries (including the DR) and the EU, including through the elimination of tariffs. **Details:** Most products will be duty-free or are subject to a tariff elimination schedule, though some sensitive products are excluded from the liberalization (e.g. for CA these products include *beef, pork, prepared meat, sugar, rice, some vegetables and dairy products; for the EU, these include certain meat products, powered milk, yoghurt, butter, tomatoes, some fruits, cereals, rice, grain sorghum, some sugars, and certain animal feeds*.
Tariffs	**Aim:** Establishing a common external tariff. The Central American Tariff System is based on a harmonized classification code. **Details and status:** As of early 2012, this is in place for about 95.7 percent	**Aim:** Immediate elimination or phasing out of tariffs over time, depending on products. **Details and status:** Being implemented. *For sensitive agricultural products*, CA tariffs are being reduced according to product and country. While the tariffs in 50 percent of all	**Aim:** Immediate elimination or phasing out of tariffs over time, depending on products. **Details:** The agreement will eliminate tariffs on 99 percent of products traded between the two regions upon full implementation. *For agricultural products,* CA eliminates tariffs

	of product tariff lines, but excludes vehicle lines. The member countries apply the following tariff levels: • 0 percent for capital goods and raw materials not produced in the region. • 5 percent for raw materials produced in Central America. • 10 percent for intermediate goods produced in Central America. • 15 percent for final consumption goods. There are exceptions to these tariffs related to fiscal rules, WTO regulations, and certain productive sectors.	products were eliminated immediately, the phase out time frames also include 5, 10, 12 15, 18, and 20 years. Tariffs on most U.S. exports will be eliminated within 15 years. There is also back loading if tariff elimination for CA, with liberalization taking place at 7 or 12 years. Almost all US tariffs were eliminated immediately on agricultural goods. . *For manufactures*, almost all manufacturing tariffs were eliminated with the implementation of CAFTA-DR, though some items will see reductions over a period of five to ten years. While the US liberalized 99.8 percent of manufacturing products with the implementation of CAFTA-DR, Central America liberalized 80 percent of U.S. manufacturing exports when the agreement began to be implemented, with the remainder having a phase-out period of 5, 10, 12 and 15 years.	most EU exports in10 years, though will impose tariff rate quotas for a few products. The EU will abolish duties immediately on most agricultural goods, and the rest within seven years. The EU will also have tariff rate quotas on a few products. *For manufactures*, CA will remove tariffs immediately on 50 percent of tariff lines (two thirds of EU exports), 96 percent of tariff lines within 10 years, and virtually all tariff lines within 15 years. The EU will remove virtually all duties immediately on manufactures.
Non-tariff barriers. The agreements also aim at the elimination of non-tariff barriers to create a single market. These are covered below.			
Rules of origin In order to benefit from trade preferences and reduced tariffs, a good must be classified as originating good with a certificate under the rules of origin, which ensure that trade/tariff benefits affect goods produced in the members' territory.	**Aim:** In general, the rules provide that goods originating (or produced) from the five CACM countries benefit from free trade within the region, with specific verification procedures in case there are doubts over origin. **Details and status**: These are defined product by product in Central American regulations. Not all goods are classified as originating goods. There are no rules established for *textile products*, which benefit from free trade until they are defined. There are simplified documents and procedures for originating goods, but	**Aim**: In general, rules of origin allow free trade of goods originating from the seven member countries, including the Dominican Republic and the U.S. In addition, there is also cumulation of origin which permits different stages of inputs and final goods production to occur in any member country and allow the use of material from the U.S, thus encouraging co-production arrangements across countries. **Details and status**: Implemented. However, problems still result from mainly from difficulties in interpreting the rules of origin, especially for textiles. *For textiles and apparel*, there are no duties	**Aim:** In general, rules of origin will allow free trade of goods originating from the seven CA countries and the EU. Intraregional trade will be facilitated by allowing members from a wide area to share production and use inputs from all other members in the elaboration of goods. **Details:** For many *manufactures*, the amount of non-originating material that is allowed is 10 percent of the price of the product (the "de minimis rule"). *For* many *textile products,* such as cotton garments and stockings, a flexible rule of origin was agreed that allows import of a cloth from any other country within the quota. *For coffee*, CA countries obtained rigid rules of

	problems exist with their verification.	on apparel made from regional fabric using yarn made in member countries, while a limited amount of inputs from Canada and Mexico also count as domestic inputs. In addition, the amount of third-party content (the "de minimis rule") has increased to ten percent. Less restrictive rules of origin also exist for certain products, such as underwear and pajamas. Many *manufacturing goods* are subject to special rules of origin that can be flexible, and allow some input from third countries (for example, steel production).	origin, whereby the good needs to be grown and harvested in CA or the EU for it to be subject to trade preferences. The agreement also allows the use of inputs for goods from countries with which the two regions have free trade agreements (Bolivia, and Colombia, Ecuador, Peru, and Venezuela).
Customs administration	**Aim**: Gradual creation of a customs union for the free transit of goods regardless of origin within the CACM. This is to be done through the harmonization of customs procedures. **Details and status**: Not implemented. Although the CACM customs administrations have an agreement on mutual cooperation and technical assistance, there is no free circulation of goods, and there are separate national customs administrations (even in the case of Guatemala and El Salvador which in 2008 affirmed their commitment to create a customs union with each other, progress has been slow). Basic common customs regulations exist but there are not uniformly applied across countries, sometimes due to conflicting national legislation. Overall, security problems, fraud, governance issues, technical, software, and cooperation problems, lack of resources, and a lack of political will and financing have	**Aim**: Encourage transparency, predictability, and efficiency in the operation of customs procedures. Boost cooperation between members on customs matters. Modernize operations. Rules of origin designed to be easier to administer for customs. **Details and status:** Central American countries agreed to a list of actions within three years, such as internet publication of all norms and regulations, automation of clearance procedures, electronic presentation of certificates of origin, and adoption of management and risk evaluation systems. Nonetheless, the modernization of customs has lagged. and countries have been unable to carry out all their commitments. Delays persist at borders, and customs determination of rules of origin and other specifications are lengthy. Central American exporters do not always understand well U.S. customs procedures and rules.	**Aim:** Reinforce cooperation in customs, in order to ensure that legislation, procedures, and administrative capacity fulfill the objectives of effective control, promotion of trade facilitation, and promote regional integration in CA. **Details**: Introduction a single duty for the region within two years. Implementation of a single administrative document for customs declarations within three years. Harmonization of customs legislation and customs requirements for imports within five years.

	inhibited progress in this area.		
Sanitary and phytosanitary (SPS) measures These are regulations that protect human, animal, plants or health from risks, including pests and diseases, additives, contaminants, toxins, or organisms that cause disease in food and beverages.	**Aim:** Harmonize and regulate measures to protect human health, and that of animals, plants, and vegetables, so that these do not affect intra-regional trade. **Details and status**: There are some harmonized regulations on SPS, and members are working towards the adoption of a SPS guideline for CA. However, its implementation remains challenging, including because there is weak administrative capacity in some countries. This area is still particularly problematic for intra-regional trade.	**Aim:** Apply WTO agreement on SPS measures and resolve problems to meet standards required to enter the U.S. market. **Details and status:** The US sanitary and agriculture agencies are providing technical assistance in this area to help reduce delays in food inspection procedures for some products from Central America. For example, member countries are moving toward accepting the US meat inspection system as their own. Still, problems persist regarding the understanding and implementation of very technical SPS rules.	**Aim:** Reaffirm and go beyond WTO agreement on SPS, in order to improve market access to other markets whilst safeguarding the health of animals, humans, and plants. **Details:** The AA will regionalize SPS import requirements and procedures, including inspections of imports and certification. The agreement will aim to identify certain products as low risk within two years, and others as medium risk within five years. EU will assist CA exporters to comply with EU regulations. There is a commitment to provide technical assistance.
Technical barriers to trade (TBT) These refer to obstacles that may occur when applying product standards, (technical regulations) and procedures used to establish whether a product conforms to the specified standards (e.g. rules for product weight, size, or packaging).	**Aim:** Standardize TBT rules and authorization procedures of member states to avoid obstacles to intra-regional trade. **Details and status:** There have been some advances on the harmonization of Central American Technical Rules (CATR). 47 CATRs have been harmonized and six are under revision as of February 2012. However, the CATRs are not always implemented properly or uniformly across the region.	**Aim:** Build on WTO rules on TBT to encourage transparency, accountability, and cooperation on regulatory issues. **Details and status**: Technical barriers to trade persist and CAFTA-DR countries continue to work towards their elimination.	**Aim:** Facilitate trade in goods by reducing TBT. Promote the development of regional technical regulations to replace national ones, and enhance capacity and cooperation in this area. Goes beyond WTO agreement on TBT. **Details:** Members will cooperate when drafting technical regulations, setting standards, and designing conformity assessments. The requirement for permanent labeling will be simplified. The AA will promote the development of harmonized regulations and standards, with the aim of adopting specific technical regulations within five years on food and beverages, and other products. Technical assistance will be provided.
Trade in services	Not covered.	**Aim:** To regulate and liberalize cross-border trade in most service sectors. One of the main obligations is to give national treatment and most favored nation treatment to service suppliers of other member countries. There are some exceptions for sensitive sectors	**Aim:** To liberalize the cross-border supply of services. **Details:** The agreement commits a member country to provide treatment no less favorable than it accords to its own services and service providers and does not allow a country to place

		depending on the country (e.g. insurance companies in Guatemala). **Details and status:** The agreement has been implemented in the specified service sectors, including financial services, insurance, telecommunications, express delivery, computer and related services, tourism, transport, construction, audio-visual and entertainment, e-commerce, professional services (architects, engineers, and accountants), and energy.	limitations on the number of services suppliers, or place limits on the total number of service operations. The EU-CA AA will cover business services; telecommunications; information; postal services; financial services; maritime transport; other transport; construction and engineering; educational services; environmental services; health related and social services; travel, cultural and sporting services; and energy.
Other areas	Not covered.	The agreement provides equal rights to foreign *investors* as domestic ones, and strengthens *intellectual property rights* and copyright protection. It requires member countries to enforce domestic *labor and environmental regulations*. DR-CAFTA also commits to nondiscriminatory access to *government procurement* and enhances transparency in this process. There is cooperation on *competition* policy enforcement.	The agreement gives protection of *intellectual property rights* and CA countries will adopt *geographical indications*, as EU countries have (for example, Champagne). It will liberalize current payments and capital movements between members. The AA requires CA countries to adopt regional standards on *competition* policy and requires CA to establish a regional competition authority in seven years with EU support. There is a *human rights clause* and a sustainable development chapter covering *labor and environmental standards* to comply with international conventions. There are rules on transparency in *public procurement,* with the EU to liberalize its procurement to CA immediately, and CA liberalization commitments differ per country. The AA includes efforts to establish a single point of access for public procurement at CA regional level.

Sources: de Gavidia (2011); González (2005); Hornbeck (2012); Jaramillo and Lederman (2006); SIECA (2012); Woolcock, Keane, Stevens, and Bartels (2012); SIECA, CAFTA-DR, and EU-CA AA official trade regulations, summaries, and press releases.

Appendix III. International Trade Agreements in CAPDR[25]

Name	Countries	Status
Bilateral Free Trade Agreement between Central America and Chile	Chile with Costa Rica, El Salvador, Guatemala, and Honduras	Implemented in Costa Rica and El Salvador in 2002, in Honduras in 2008, and in Guatemala in 2010.
Bilateral Free Trade Agreement between Central America and Canada	Canada with Costa Rica, Guatemala, El Salvador, Honduras, and Nicaragua	Implemented in Costa Rica in 2002. Honduras concluded negotiations in 2010, but not implemented yet. Guatemala, El Salvador, and Nicaragua are still negotiating.
Bilateral Free Trade Agreement between El Salvador, Guatemala, and Honduras with Colombia	Colombia with El Salvador, Guatemala, and Honduras	Implemented in Guatemala in 2009, and in El Salvador and Honduras in 2010.
Bilateral Free Trade Agreement between Costa Rica and CARICOM (Caribbean Community)	Costa Rica with Antigua and Barbuda, Barbados, Belize, Dominica, Granada, Guyana, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, and Trinidad and Tobago	Implemented in Trinidad and Tobago in 2005, and Barbados and Guyana in 2006.
Bilateral Free Trade Agreement between Costa Rica and China	Costa Rica and China	Implemented in 2011.
Partial Preferential Free Trade Agreement between Guatemala and Ecuador	Guatemala and Ecuador	Pending approval by congress in Ecuador.
Bilateral Free Trade Agreement between Panama and Central America	Panama with Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua	Implemented in El Salvador in 2003, Costa Rica in 2008, and in Guatemala, Honduras and Nicaragua in 2009.
Bilateral Free Trade Agreement between Peru and Central America	Peru with Costa Rica, El Salvador, Honduras, Guatemala, and Panama	Signed in 2011 and pending approval by national legislatures.
Bilateral Free Trade Agreement between Central America and the Dominican Republic	The Dominican Republic with Costa Rica, Guatemala, El Salvador, Honduras, and Nicaragua	Implemented in Guatemala, El Salvador, and Honduras in 2001, and in Costa Rica and Nicaragua in 2002.
Bilateral Free Trade Agreement between Taiwan Province of China and Guatemala	Taiwan Province of China and Guatemala	Implemented in 2006.
Bilateral Free Trade Agreement between Taiwan Province of China and Nicaragua	Taiwan Province of China and Nicaragua	Implemented in 2008.
Bilateral Free Trade Agreement between Taiwan Province of China and El Salvador and Honduras	Taiwan Province of China, El Salvador and Honduras	Implemented in El Salvador and Honduras in 2008.
Bilateral Trade Agreement between Costa Rica and Singapore	Costa Rica and Singapore	Signed in 2010 and pending approval by the legislative assembly in Costa Rica.

Source: Secretaría de Integración Económica Centroamericana (SIECA), and the Organization of American States

[25] As of February 2012.

REFERENCES

Abiad, A., E. Detragiache, and T. Tressel, 2010, "A New Database of Financial Reforms," *IMF Staff Papers*, Vol. 57, pp. 281–302 (Washington: International Monetary Fund).

Alcalá, F., and A. Ciccone, 2004, "Trade and Productivity," *Quarterly Journal of Economics*, Vol. 119 (May), pp. 613–646.

Alesina, A., and R. Wacziarg, 1998, "Openness, Country Size, and Government," *Journal of Public Economics*, Vol. 69, No. 3, pp. 305–321.

_____, E. Spolaore, and R. Wacziarg, 2000, "Economic Integration and Political Disintegration," *American Economic Review*, Vol. 90, No. 5, pp. 1276–1296.

_____, E. Spolaore, and R. Wacziarg, 2004, "Trade, Growth and the Size of Countries," Harvard Institute of Economic Research Working Paper 1995 (Cambridge, MA: Harvard University).

Asmundson, I., 2012, "More World Trade Flows: An Updated Dataset," IMF Working Paper, forthcoming.

Barro, R., and J. Lee, 2010, "A New Dataset of Educational Attainment in the World, 1950–2010" NBER Working Paper 15902 (Cambridge, MA: National Bureau of Economic Research).

Brenton, P., and R. Newfarmer, 2007, "Watching More than the Discovery Channel: Export Cycles and Diversification in Development," World Bank Policy Research Working Paper 4302 (Washington: World Bank).

_____, R. Newfarmer, and P. Walkenhorst, 2009, "Avenues for Export Diversification: Issues for Low-Income Countries," Commission on Growth and Development Working Paper No. 47 (Washington: World Bank).

Cohen, D., and M. Soto, 2007, "Growth and Human Capital: Good Data, Good Results," *Journal of Economic Growth*, Vol. 12, pp. 51–76.

Economic Commission for Latin America and the Caribbean (ECLAC), 2010, "The trade dimension of regional integration," *Latin America and the Caribbean in the World Economy, 2009-2010*, pp. 97–8.

Feenstra, R., R. Lipsey, H. Deng, A. Ma, and H. Mo, 2005, "World Trade Flows: 1962–2000" NBER Working Paper 11040 (Cambridge, MA: National Bureau of Economic Research).

de Gavidia Mayora, Y., 2011, "Agenda de Integración Comercial de los Estados Miembros del Subsistema de Integración Económica Centroamericana," (unpublished; Washington: World Bank).

Granados, J., 2010, "Avances y Desafíos de la Unión Aduanera Centroamericana: La Dimensión Comercial", presented at the CAPTAC conference 'Experiencias e Implicancias de Uniones Aduaneras', Guatemala City, Guatemala, March. Available via the Internet: http://www.captac-dr.org/web/

Grubel, H., and P. Lloyd, 1971, "The Empirical Measurement of Intra-Industry Trade," *Economic Record*, Vol. 47, No. 4, pp. 494–517.

Guasch, J., L. Rojas-Suarez, V. Gonzales, 2011, "Competitiveness in Central America: The Road to Sustained Growth and Poverty Reduction," (Washington: Center for Global Development).

Hausmann, R., J. Hwang, and D. Rodrik, 2007, "What You Export Matters," *Journal of Economic Growth*, Vol. 12, No. 1, pp. 1–25.

Heston, A., R. Summers, and B. Aten, 2011, "Penn World Table Version 7.0," Center for International Comparisons of Production, Income, and Prices at the University of Pennsylvania.

Hornbeck, J., 2012, "The Dominican Republic-Central America-United States Free Trade Agreement (CAFTA-DR): Developments in Trade and Investment," *CRS Report for Congress* (Washington: Congressional Research Service).

Inter-American Development Bank, 2008, *Evaluation of IDB's Support to the Plan Puebla Panama Initiative.* (Washington: Inter-American Development Bank).

Jaramillo, C., and D. Lederman, 2006, "Challenges of CAFTA: Maximizing the Benefits for Central America," Chapters 2–3 (Washington: World Bank).

Lionço, C., 2010, "Rol de las aduanas en el proceso de integración: situación actual y desafíos pendientes," presented at Central American Bank for Economic Integration conference, 'Avances y Desafios de la Integración Centroamericana: Una revisión a 50 años de Historia,' Tegucigalpa, Honduras, September.

Marcelo, D., A. Stokenberga, and J. Schwartz, 2010, "Understanding the Benefits of Regional Integration to Trade: The Application of a Gravity Model to the Case of Central America," World Bank Policy Research Working Paper 5506 (Washington: World Bank).

Mesoamerica Project Executive Commission, 2010, *2009–2010 Executive Report, Mesoamerica Project Executive Commission, XII Summit of Heads of State and Government of the Tuxtla Mechanism for Dialogue and Coordination, Cartagena de Indias, Colombia, October 25 and 26, 2010.* Available via the Internet: www.proyectomesoamerica.org/

_____, 2011, *Informe Ejecutivo del Proyecto Mesoamérica 2012-2011.* Available via the Internet: www.proyectomesoamerica.org/

_____, 2011, *Países en el Proyecto Mesoamérica, Tendencias económicas y sociales.* Available via the Internet: www.proyectomesoamerica.org/

_____, 2011, *Proyecto Integración y Desarrollo Mesoamérica, Avances y perspectivas.* Available via the Internet: www.proyectomesoamerica.org/

Minondo, A., 2010, "Exports' Quality-Adjusted Productivity and Economic Growth," *The Journal of International Trade and Economic Development*, Vol. 19, No. 2, pp. 257–287.

Mishra, S., S. Lundstrom, and R. Anand, 2011, "Service Export Sophistication and Economic Growth," World Bank Policy Research Working Paper 5606 (Washington: World Bank).

Perales, J. R., 2011, "Central America: The MCCA and CAFTA-DR," *Integration and Trade Journal No. 33,* Vol. 15, pp. 109-11, Institute for the Integration of Latin America and the Caribbean.

Secretaría de Integración Económica Centroamericana (SIECA), 2012, *Estado de la Situación de la Integración Económica Centroamericana.* Available via the Internet: http://www.sieca.int/site/inicio.aspx

Spilimbergo, A., J. Ostry, and A. Prati, 2009, "Structural Reforms and Economic Performance in Advanced and Developing Countries," IMF Occasional Paper No. 268 (Washington: International Monetary Fund).

Swiston, A., and L. Barrot, 2011, "The Role of Structural Reforms in Raising Growth in Central America," IMF Working Paper 11/248 (Washington: International Monetary Fund).

Woolcock, S., J. Keane, C. Stevens, L. Bartels, 2012, "The Trade Chapter of the European Union Association Agreement with Central America," Study by the Policy Department of the European Parliament (Belgium: European Parliament).

World Bank, various editions, *Connecting to Compete: Trade Logistics in the Global Economy*, (Washington: World Bank).

World Economic Forum, 2011, *The Global Competitiveness Report 2011–2012*, (Geneva: World Economic Forum).

_____, 2012, *The Global Enabling Trade Report 2012: Reducing Supply Chain Barriers*, (Geneva: World Economic Forum).