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In this issue:

## A Study of the Information Technology Trade between the United States and the Dominican Republic-Central America Free Trade Agreement Nations

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**Keywords:** global information technology (IT) trade, import and export of IT components, Dominican Republic-Central American Free Trade Agreement, DR-CAFTA

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# A Study of the Information Technology Trade between the United States and the Dominican Republic-Central America Free Trade Agreement Nations

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## ABSTRACT

This study examines the import and export of four major information technology products between the United States and nations in the Dominican Republic Central America Free Trade Agreement (DR-CAFTA). These countries are Costa Rica, El Salvador, Dominican Republic, Guatemala, Honduras, and Nicaragua. The products examined are computer equipment (3341), communication equipment (3342), audio and video equipment (3343), and semiconductors and other electronic components (3344). Surprisingly, the United States imports more IT products from nations in the Dominican Republic Central American Free Trade Nations than it sells to them. Costa Rica and the Dominican Republic are the major importers for the products that are specified. Such trends identified are indeed troubling for the IT manufacturing sector in the United States. As a leader in the producing of leading high tech products, it is surprising that the United States is actually buying more information technology products from other nations, including nations in DR-CAFTA.

**Keywords:** global information technology (IT) trade, import and export of IT components, Dominican Republic-Central American Free Trade Agreement, DR-CAFTA

## 1. INTRODUCTION

Over the years the theory of international trade has been a subject studied by many economists, researchers, and governmental

agencies. According to Taylor and Frost (2002), international trade, as the exchange of goods and services (trade) between people or firms in different nations, the question whether engaging in this practice

can bring benefits or disaster to those involved in it arises (Taylor & Frost, 2003). Many of the benefits that a nation can obtain from international trade are mentioned in the article, "Free Trade Benefits All" written by Tupy (2006) include:

- Trade improves global efficiency in resource allocation.
- Trade allows partners to gain from specializing in producing those goods and services they do best.

Economists call that the law of comparative advantage. When producers create goods they are comparatively skilled at, such as Germans producing beer and the French producing wine, those goods increase in abundance and quality (Tupy, 2006, p. 2)

In her article Tupy also cites Columbia University economist Arvind Panagariya who wrote the paper, "Miracles and Debacles: Do Free-Trade Skeptics Have a Case?" (2003) Panagariya mentions, "On the poverty front, there is overwhelming evidence that trade openness is a more trustworthy friend of the poor than protectionism. Few countries have grown rapidly without a simultaneous rapid expansion of trade. In turn, rapid growth has almost always led to reduction in poverty." (Panagariva, 2003, p. 2) Even though free trade can bring much prosperity to a nation's overall economic statue, the dark side to this practice often becomes visible to many nations. Douglas A. Irwin in his article, "A Brief History of International Trade Policy," (2001) studies Adam Smith's Wealth of Nations and mentions that Smith was remembered for his incisive analysis of trade policy, where he detailed not only the benefits of free trade but the costs that came with it. Book IV of the Wealth was a sustained and compelling attack on mercantilism. Smith argued that "the great object" of mercantilism was to diminish as much as possible the importation of foreign goods for home consumption, and to increase as much as possible the exportation of the produce of domestic industry. (Irwin 2001, p. 3; Smith 1776, Book IV, Chapter 1)

This argument that Irwin gave is not the only one to be considered as a disadvantage of trading. There are other important factors that can be considered as harms to any nation that gets involved in international trade. In the article, "The Case for Trade Liberaliza-

tion in Developing Countries," Rudiger Dornbush (1992) argues:

*The elimination of obstacles to trade invariably creates an immediate increase in imports. But although inputs become more readily available and technology improves, the beneficial rise in exports does not happen immediately, even if a real depreciation is undertaken. For example, when Chile first liberalized imports almost fully in the late 1970's (but overvalued its managed exchanged rate) import levels exploded and the exchange rate collapsed. Stabilization had to be undertaken. Without depreciation, exports will scarcely help pay for higher imports (1992, pp. 81-82).*

What Dornbush (1992) explains in this article is that in order for a nation to have benefits from the practice of trade (imports and exports), there should always be a balance between this two in order to prevent depreciation in its economy. Whether a nation is involved in international trade or not, there will always be possibility of benefiting or harming from it. It is a nation's overall economic situation, and strategy implementation of the key factors that determines the decision of acquiring this practice.

One major group of countries that has been involved in free trade with the United States in recent years is the Central America Free Trade Agreement-Dominican Republic - CAFTA-DR. "This group is compiled by Costa Rica, El Salvador, Dominican Republic, Guatemala, Honduras, and Nicaragua". (CAFTA Facts 2005, p. 1) "This agreement is believed to have a great impact and importance to the United States trade expansion and economic growth. CAFTA-DR is an agreement, according to The U.S. International Trade Commission, will have an effect on the overall U.S. trade deficit, reducing it by \$756 million" (CAFTA Facts, 2005, p. 1). "Most of the exports from Central America sent to the U.S. are duty-free; on the contrary, exports from the U.S. to Central America have some sort of tariff or tax. So we can conclude that CAFTA is not a way to open the U.S. market more, but it is a way to open the Central American market to U.S. Products which makes CAFTA-DR so important to the U.S. economy." (CAFTA Facts, 2005) According to the CAFTA Policy Brief (2005), "CAFTA and the U.S. Trade Deficit,"

this agreement will preserve an existing \$4 billion in U.S. manufactured exports that would otherwise be lost to competition from Asia (CAFTA Facts, 2005, paragraph 3).

In another CAFTA Policy Brief, "CAFTA Benefits the American Family," (2005) "CAFTA would result in \$1 billion in additional manufactured exports not to mention that the trade relationship is worth \$32 billion, and the region is the 2<sup>nd</sup>-largest U.S. export market in Latin America – a larger U.S. export market than Russia, India, and Indonesia combined." (CAFTA Facts, 2005, p.1) This trade agreement will overall be beneficial to Americans and the U.S. economy. President George W. Bush said in a May 17, 2005 speech, "By opening new markets, we'll increase prosperity for our small businesses and farmers and manufacturers, and create jobs for American workers. By enforcing trade laws and agreements, we will ensure a level playing field for America's workers. American workers can compete with anybody, any time, anywhere when the rules are fair." (CAFTA Facts, 2005, p. 1)

## 2. STATEMENT OF PROBLEMS

The US needs to deal with several economic problems regarding International Trade. In general, the US economy is continuously changing, but in the past years it has not been a positive one. One of the main concerns to the United States' economy is the National Deficit. "Today the National Deficit it is at \$5.3 trillion. In 2007 it was 36.8 percent of GDP, ranking 65<sup>th</sup> in the world. The total debt is currently 66.5% of GNP." (Wikipedia 2007, paragraph 1) Now it is a big concern that the National Debt is continuously increasing. The US Balance of Trade is being negative for the past 30 years. In 2007 it was \$-708,515. The Trade Exports was \$1,628,360 besides the Trade Imports \$2,336,870. These numbers show that the Balance Trades is unfavorable for the US because it is importing more than exporting." (Data 360, paragraph 1)

The consequences of these facts are the loss of competitiveness respect to the other countries due to the other countries are growing faster than the US and have a more competitive advantage. "The US is not maintaining its competitiveness. The labor force is 153.1 million (includes unemployed). The unemployment rate is 4.6%. The indus-

trial production growth is 0.5%; it is a very low percentage of growing, especillay in the industrial area." (The World Factbook 2007, pp. 8-9) "The US standard of living is also affected. The US per capita income grew 5.2% in 2007; down from 5.6% in 2006. Now the jobs that contribute the most to personal income are professional services, health care, state and local government, and finance. The construction industry contributed almost nothing in 2007". (Bureau of Economic Analysis, 2007, p. 2)

## 3. STATEMENT OF OBJECTIVES

According to the United States Department of State (2007), "The U.S. - Central America Free Trade Agreement - Dominican Republic (CAFTA-DR), signed August 5, 2004, is a historic agreement that creates the second-largest free trade zone in Latin America for U.S. exports. Under this agreement, the Dominican Republic joins the Central American Free Trade Agreement (CAFTA) signed earlier in 2004 with Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua." (U.S. Department of State, 2007)

This study examines the information technology trade between Central American-Dominican Republic Free Trade Agreement and the US in the time period of 1998-2007. The specific products studied are NAICS 3341-Computer Equipment, NAICS 3342-Communications Equipment, NAICS 3343-Audio and Video Equipment, and NAICS 3344-Semiconductors and other Electronic Components." (TradeStats Express, 2007) It first examines the imports and exports between these countries in the products previously mentioned. Secondly, this study is going to analyze the different Balance of Trades in regard to each one of these countries in order to understand which country is the best importer and exporter in the Trade, and which one brings more revenues and income to the nation as a whole. Lastly, an analysis will be completed to understand the specific problems that are affecting the changes in the imports and exports between these countries and the United States, and the causes that originated the changes in the past ten years.

The issue examined in this case is to find any patterns and trends from the data collected on imports, exports, and net balance from each different country that is part of

the CAFTA-DR trade agreement in respect to the technology products mentioned above. By doing this research the question to whether importing or exporting to and from these countries is beneficial or harmful to the United States' balance of trade will be answered. If there are many benefits from importing and exporting from any of these countries, what can the United States implement to make the trade process easier to these countries so that they can continue their relationship with the United States in a positive spectrum? On the other hand, if there is any harm from the importing and exporting to these countries, what kind of barriers can the United States implement to stop the harm that is doing to the United States' balance of trade? In summary this study is going to examine the movements and changes related to the imports, exports and balance between these countries of specific IT products in the last ten years.

#### 4. METHODOLOGY

In order to answer these research questions, data on the imports and exports of the four products were collected from the National Trade Data website. The study first finds out those countries from whom the United States is buying these particular products, and secondly who are those countries that are buying this type of products from the United States. After looking at this fundamental information, the dominating and losing nations in respect to imports, exports, and net balance for each product can then be identified. Next, the most and least important nation to the United States in regard to import, exports and net balance will also be identified. Finally, the slope was also computed by dividing the last year by the first year of activity of each product. The slopes indicated the rates of change and we can find out which of the countries has the highest and lowest rate on imports, exports and net balance in respect to their trading with the United States.

#### 5. FINDINGS

As it can be seen in Table 1, which shows the import and export of the Product 3341 (Computer Equipment), the importation of the product has been led by Costa Rica with an average of \$9,900,000 over a ten year period from 1998 to 2007; on the other

hand Nicaragua had the lowest average with \$24,000 imports. The average number of imports is \$11,362,000 for the six countries; the lowest year of imports in average for the countries was 2001 with \$7,103,000 and the highest 2007 with \$24,104,000. The ranking of the other countries is as follows: Dominican Republic ranked second with \$930,000, El Salvador ranked third with \$289,000, Guatemala ranked fourth with \$137,000, and Honduras ranked fifth with \$83,000. Based on the results we can observe that Costa Rica buys the most from the U.S. and that the rest of the 5 countries combined do not make as many imports as Costa Rica does.

Exports from product 3341 were also led by Costa Rica with an average of \$136,976,000 and the lowest came from Nicaragua with \$23,539,000. The average number of exports for all countries was \$447,233,000. The lowest average year was 1998 with \$273,183,000 and the highest 2007 with \$692,749,000. By ranking Costa Rica, Guatemala, Dominican Republic, El Salvador, Honduras, and Nicaragua. Again Costa Rica came in on top with a balance of \$127,076,000 and Guatemala came in last with \$20,642,000. The average Net Balance for all countries over the last 10 years was \$354,354,000. The rankings from the highest to the lowest are Costa Rica, Dominican Republic, El Salvador, Honduras, Nicaragua and Guatemala. Based on the findings it can be concluded that all of these countries, even the lowest ranking ones, are making a profit; they are all selling more than they are buying. However, it seems Costa Rica has found a niche; it is the most competitive country with an average of \$127,076,000 and the only other country close to it is the Dominican Republic with an average of \$79,625,000. This also tells the U.S. that it needs to break those markets and start exporting more if they want to gain market share which they have been doing little by little.

Table 2 shows the import and export of product 3342 (Communication Equipment). Import of this product has been led by the Dominican Republic with a 10 year average of \$31,059,000 and the country with least imports is Nicaragua with \$75,000. The average imports in dollars for all countries throughout the 1998-2007 year-span was \$55,661,000. The year of lowest imports in

average for the six countries was 2002 with \$4,744,000 and the highest 1998 with \$130,947,000. For ranking purposes Dominican Republic came on top with most imports then was followed by Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua.

In the case of exports for this product, the Dominican Republic was also the leader with \$125,484,000 worth of it in an average of 10 years. Nicaragua exported the least with an average of \$21,478,000. The average exports for all the countries combined were \$414,829,000, the highest year was 2007 with \$657,279,000 and the lowest year was 1998 with \$262,651. By ranking Dominican Republic had the most exports followed by Guatemala, El Salvador, Costa Rica, Honduras, and Nicaragua.

Finally, the average balance for all the countries combined was a whopping \$359,168,000. Guatemala has an average of \$102,119,000 positive balance over a 10 year period which is the highest of all the countries. Nicaragua comes in sixth with a positive balance of \$21,403,000. All these countries are competitive, but when it comes to product 3342, Guatemala seems to have a specialty for it. It is obvious that the U.S. needs to start to look at means to keep the exports flowing.

Table 3 shows the import and export of Product 3343 (Audio and Video Equipment). It has a very small number of imports compared to the above two products. Imports have been led by Costa Rica with a 10-year average of \$339,300 and the country with least imports is Nicaragua with \$1,800. The average for imports in dollars for all countries was \$900,800. The year with the lowest average imports for the countries was 2000 with \$113,000 and the highest 2007 with \$3,008,000 which was a huge improvement by U.S. exporting. In terms of ranking, Costa Rica had the highest number of imports, followed by Dominican Republic, Guatemala, Honduras, El Salvador, and finally Nicaragua.

On the exporting side of the product 3343, Dominican Republic had the most exports in average worth \$20,105,000. At the end of the list was Nicaragua with \$2,669,000. On average, throughout the 10 years these six countries exported \$67,622,000 of product 3343. The best year for the countries was

2007 when they averaged \$87,912,000 of exports, and their worst year was 2001 with an average of \$49,456. By ranking, Dominican Republic had the most exports, followed by Guatemala, Costa Rica, Honduras, El Salvador and Nicaragua.

Finally, the net balance was at a positive for all the countries for this product in Table 3. The countries managed to export a lot more than the U.S., having a total average of \$66,721,000. The Dominican Republic had the best and highest average of \$19,808,000 for the ten years while Nicaragua came in last. It seems imports have been increasing but at a slower pace than exports. Again the U.S. needs to step up to try and balance its imports and exports to make the agreement more useful towards them. These six countries have been doing a great job at exporting much more than they have been importing which helps their overall income and economy as a whole.

Finally, the import and export of product 3344 (semiconductor & other electronic components) is shown in Table 4. The importation has been led again by giant importer Costa Rica with a ten-year average of \$785,914,000 and Nicaragua again had the lowest worth in importation with \$47,000 which is good for them because they can achieve a positive net balance. The average number of imports for the six countries is \$976,678,000 with the year 1998 having the lowest imports with \$597,349,000 and the year 1999 having the highest with \$1,760,199,000 worth of imports.

In the exporting of the same product, it shows an average of \$850,402,000 in exports for the 10 years in all the countries. Costa Rica, the biggest importer of the product, is also the biggest exporter with a high of \$678, 696,000 and Nicaragua again is the lowest exporter with \$5,041,000. The lowest year for exporting was 1998 with a low of \$204,533,000; the highest was 2007 with a high of \$1,335,830,000, almost \$1.2 billion coming from Costa Rica.

Net effect, El Salvador came in on top with a balance of \$22,389,000 and Costa Rica for the first time came in last with -\$107,218,000. The average Net Balance for all countries over the last 10 years was -\$126,276,000. The rankings from high to low were El Salvador, Guatemala, Honduras, Nicaragua, Dominican Republic, and Costa.

Costa Rica had found a niche in a different product, but it seems they can not compete with product 3344 and they have to import way more than they export. For this particular product the U.S. has a positive balance against the other countries which means the U.S. is now exporting more than they are importing.

## 6. LIMITATIONS, CONCLUSION, AND IMPLICATIONS

After analyzing the data, it can be concluded that Costa Rica and the Dominican Republic are the two major importers for the products studied. One question that arises is how can the US get the other countries to import as much as they do? This is more complex than it sounds; countries have a broad range of limitations and problems that keeps the U.S. from fully entering the market. The U.S. imports a much greater amount of products than it exports which is the main problem that appears when looking at the information given.

Costa Rica and the Dominican Republic seem to be doing better than the other countries, so what is it, that drives the countries, in order to break into their market the producers need to learn as much as they can about the certain country. The US manufacturer has to ask why Nicaragua buys so little? What can the manufacturer do to improve sales? The U.S. is in a major trade deficit at the moment, and there is fear of recession and an economy collapses. There clearly must be something the U.S. can do. As the tables show for some of the products during the 2001-2002 year there was a drop in imports, does it have anything to do with 9/11? It probably does, but the exports from the U.S. bounced back up. In order for the U.S. to begin balancing the trade deficit there must be a unity between agencies, but more than unity there needs to be a voice.

For product 3341, the U.S. exports \$11,362,000 worth of a product, but imports \$447,233,000. For product 3342 U.S. exports \$55,661,000 but imports \$414,829,000. For product 3343, U.S. exports \$900,800 but imports \$67,622,000. These are all ridiculous numbers, flamboyant when you compare the imports to the exports. The only other product that had a positive outcome for the U.S. was 3344 of which the U.S. exports \$976,678,000 and

imports \$850,402,000. That is one out of four products out of the millions of products out there! More research needs to be prepared and completed to observe what it is that causes these trends, why the U.S. is importing so much, and not exporting at the same time. What are the factors and implications, and where does this initiate? After finding the answer to those questions then maybe the US can begin working on an answer.

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**APPENDIX****Table 1 Import and Export of Computer Equipment (Product 3341)**

Imports: in thousands (\$ USD)				
Countries	10 Year Avg.	Rank	10 Year Slope	Rank
Costa Rica	9,900	1	1.601	5
El Salvador	289	2	5.542	4
Guatemala	137	4	8.588	2
Honduras	83	5	7.333	3
Dominican Republic	930	2	19.339	1
Nicaragua	24	6	1.024	6
Exports: in thousands (\$ USD)				
Countries	10 Year Avg.	Rank	10 Year Slope	Rank
Costa Rica	136,976	1	2.595	3
El Salvador	58,745	4	1.955	6
Guatemala	102,296	2	3.023	1
Honduras	45,123	5	2.708	2
Dominican Republic	80,554	3	2.791	5
Nicaragua	23,539	6	2.326	4
Balance: in thousands (\$ USD)				
Countries	10 Year Avg.	Rank	10 Year Slope	Rank
Costa Rica	127,076	1	2.761	1
El Salvador	58,456	3	1.948	5
Guatemala	20,642	6	1.828	6
Honduras	45,040	4	2.705	2
Dominican Republic	79,625	2	2.212	4
Nicaragua	23,515	5	2.331	3

**Table 2 Import and Export of Communications Equipment (Product 3342)**

Imports: in thousands (\$ USD)				
Countries	10 Year Avg.	Rank	10 Year Slope	Rank
Costa Rica	23,259	2	0.125	4
El Salvador	660	3	0	5
Guatemala	351	4	0	6
Honduras	258	5	3	2
Dominican Republic	31,059	1	17.582	1
Nicaragua	75	6	0.918	3
Exports: in thousands (\$ USD)				
Countries	10 Year Avg.	Rank	10 Year Slope	Rank
Costa Rica	63,580	4	1.01	6
El Salvador	70,848	3	7.744	2
Guatemala	102,470	2	6.034	3
Honduras	30,969	5	5.652	4
Dominican Republic	125,484	1	1.163	5
Nicaragua	21,478	6	8.22	1
Balance: in thousands (\$ USD)				
Countries	10 Year Avg.	Rank	10 Year Slope	Rank
Costa Rica	40,321	4	-2.024	5
El Salvador	70,188	3	7.651	2
Guatemala	102,119	1	6.011	3
Honduras	30,711	5	5.665	4
Dominican Republic	94,425	2	0.224	6
Nicaragua	21,403	6	8.583	1

**Table 3 Import and Export of Audio and Video Equipment (Product 3343)**

Imports: in thousands (\$ USD)				
Countries	10 Year Avg.	Rank	10 Year Slope	Rank
Costa Rica	339.3	1	3.017	3
El Salvador	24.1	5	0.465	4
Guatemala	210.1	3	4.446	2
Honduras	28.7	4	0.07	5
Dominican Republic	296.8	2	7.924	1
Nicaragua	1.8	6	0	6
Exports: in thousands (\$ USD)				
Countries	10 Year Avg.	Rank	10 Year Slope	Rank
Costa Rica	11,376	3	0.84	5
El Salvador	6,965	5	1.212	3
Guatemala	16,572	2	0.773	6
Honduras	9,935	4	0.996	4
Dominican Republic	20,105	1	1.163	2
Nicaragua	2,669	6	1.45	1
Balance: in thousands (\$ USD)				
Countries	10 Year Avg.	Rank	10 Year Slope	Rank
Costa Rica	11,037	3	0.883	5
El Salvador	6,941	5	1.225	3
Guatemala	16,362	2	0.717	6
Honduras	9,907	4	1.008	4
Dominican Republic	19,808	1	1.29	2
Nicaragua	2,667	6	1.452	1

**Table 4 Import and Export of Semiconductors and other Electronic Components  
(Product 3344)**

Imports: in thousands (\$ USD)				
Countries	10 Year Avg.	Rank	10 Year Slope	Rank
Costa Rica	785,914	1	1.588	4
El Salvador	24,106	3	0.914	6
Guatemala	612	5	9.655	2
Honduras	8,975	4	2.972	3
Dominican Republic	157,025	2	1.385	5
Nicaragua	47	6	14.714	1
Exports: in thousands (\$ USD)				
Countries	10 Year Avg.	Rank	10 Year Slope	Rank
Costa Rica	678,696	1	12.502	1
El Salvador	46,495	3	1.379	5
Guatemala	21,254	4	1.856	4
Honduras	16,286	5	0.921	6
Dominican Republic	82,632	2	2.195	3
Nicaragua	5,041	6	4.044	2
Balance: in thousands (\$ USD)				
Countries	10 Year Avg.	Rank	10 Year Slope	Rank
Costa Rica	-107	5	-1.127	6
El Salvador	22,389	1	2.232	1
Guatemala	20,642	2	1.828	2
Honduras	7,311	3	0.272	5
Dominican Republic	-74,354	6	0.554	4
Nicaragua	4,994	4	1.075	3