

# I Use of Trade Indices to Understand Trade Relations of Ecuador for Climate Smart Goods, Total Trade and Specialized Products

The following trade indices (along with their definition) have been used in this study for objective analysis of Ecuador's trade relations with its trading partners.

- **Country's Share of World Exports** It is the share of a country's total exports in the world's total exports. This ratio can be used to assess changing world market share of a country over time.
- **Share of Product in Total Exports** It is the share of each export product (at a chosen level of disaggregation) in the country's total exports.
- **Share of Market in Total Exports** It is the share of exports sold in each foreign country in the home country's total exports.

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- **Hirschman Herfindahl Index** It is the sum of squared shares of each product in total export. A country with a perfectly diversified export portfolio will have an index close to zero, whereas a country which exports only one export will have a value of 1 (least diversified).
- **Revealed Comparative Advantage Index** Measures of revealed comparative advantage (RCA) have been used to help assess a country's export potential. The RCA indicates whether a country is in the process of extending the products in which it has a trade potential, as opposed to situations in which the number of products that can be competitively exported is static. It can also provide useful information about potential trade prospects with new partners. Countries with similar RCA profiles are unlikely to have high bilateral trade intensities unless intra-industry trade is involved. RCA measures, if estimated at high levels of product disaggregation, can focus attention on other nontraditional products that might be successfully exported. The RCA index of country I for product j is often measured by the product's share in the country's exports in relation to its share in world trade:  $RCA_{ij} = (x_{ij}/X_{it}) / (x_{wj}/X_{wt})$  Where  $x_{ij}$  and  $x_{wj}$  are the values of country i's exports of product j and world exports of product j and where  $X_{it}$  and  $X_{wt}$  refer to the country's total exports and world total exports. A value of less than unity implies that the country has a revealed comparative disadvantage in the product. Similarly, if the index exceeds unity, the country is said to have a revealed comparative advantage in the product. country's exports.

- **Trade Intensity Index**

The trade intensity index (T) is used to determine whether the value of trade between two countries is greater or smaller than would be expected on the basis of their importance in world trade. It is defined as the share of one country's exports going to a partner divided by the share of world exports going to the partner. It is calculated as:

$$T_{ij} = (x_{ij}/X_{it}) / (x_{wj}/X_{wt})$$

Where  $x_{ij}$  and  $x_{wj}$  are the values of country i's exports and of world exports to country j and where  $X_{it}$  and  $X_{wt}$  are country i's total exports and total world exports respectively. An index of more (less) than one indicates a bilateral trade flow that is larger (smaller) than expected, given the partner country's importance in world trade.

- **Trade Complementarity Index**

The trade complementarity (TC) index can provide useful information on prospects for intraregional trade in that it shows how well the structures of a country's imports and exports match. It also has the attraction that its values for countries considering the formation of a regional trade agreement can be compared with others that have formed or tried to form similar arrangements. The TC between countries k and j is defined as:

$$TC_{kj} = 100(1 - \text{sum}(|m_{ik} - x_{ij}| / 2))$$

Where  $x_{ij}$  is the share of good i in global exports of country j and  $m_{ik}$  is the share of good i in all imports of country k. The index is zero when no goods are exported by one country or imported by the other and 100 when the export and import shares exactly match.

- Export Diversification (or Concentration) Index** Export diversification is held to be important for developing countries because many developing countries are often highly dependent on relatively few primary commodities for their export earnings. Unstable prices for these commodities may subject a developing country exporter to serious terms of trade shocks. Since the covariation in individual commodity prices is less than perfect, diversification into new primary export products is generally viewed as a positive development. The strongest positive effects are normally associated with diversification into manufactured goods, and its benefits include higher and more stable export earnings, job creation and learning effects, and the development of new skills and infrastructure that would facilitate the development of even newer export products. The export diversification (DX) index for a country is defined as:  $DX_j = (\sum |h_{ij} - x_i|) / 2$  Where  $h_{ij}$  is the share of commodity  $i$  in the total exports of country  $j$  and  $x_i$  is the share of the commodity in world exports. The related measure used by UNCTAD is the concentration index or Hirschman (H) index, which is calculated using the shares of all three-digit products in a country's exports:  $H_j = \sqrt{\sum (x_i/X_j)^2}$  Where  $x_i$  is country  $j$ 's exports of product  $i$  (at the three-digit classification) and  $X_j$  is country  $j$ 's total exports. The index has been normalized to account for the number of actual three-digit products that could be exported. Thus, the maximum value of the index is 239 (the number of individual three-digit products in SITC revision 2), and its minimum (theoretical) value is zero, for a country with no exports. The lower the index, the less concentrated are a country's exports.
- Export Specialization Index** The export specialization (ES) index is a slightly modified RCA index, in which the denominator is usually measured by specific markets or partners. It provides product information on revealed specialization in the export sector of a country and is calculated as the ratio of the share of a product in a country's total exports to the share of this product in imports to specific markets or partners rather than its share in world exports:  $ES = (x_{ij}/X_{it}) / (m_{kj}/M_{kt})$  Where  $x_{ij}$  and  $X_{it}$  are export values of country  $i$  in product  $j$ , respectively, and where  $m_{kj}$  and  $M_{kt}$  are the import values of product  $j$  in market  $k$  and total imports in market  $k$ . The ES is similar to the RCA in that the value of the index less than unity indicates a comparative disadvantage and a value greater than one indicates advantage of producing and exporting into the identified markets.

### I.I Revealed Comparative Advantage, Export Specialization Index and Product Concentration of Climate Smart Goods in Ecuadorian Exports: A Comparative Analysis with India

The Table II reveals that there are two products in which Ecuador has a comparative advantage in production in 2010. These two industrial codes have  $RCA > 1$  in 2010 and hence Ecuador has a comparative advantage in the production of such products. These products are

732111

Solar driven stoves, ranges, grates, cookers (including those with subsidiary boilers for central heating), barbecues, braziers, gas-rings, plate warmers and similar non-electric Domestic appliances, and parts thereof, of iron or steel.

732190

Stoves, ranges, grates, cookers (including those with subsidiary boilers for central heating), barbecues, braziers, gas-rings, plate warmers and similar non-electric Domestic appliances, and parts thereof, of iron or steel.

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**Table II:** Revealed Comparative Analysis for CSG Products for Ecuador in 2009 and 2010.

ReporterName	Year	Productcode	RCA
Ecuador	2009	732111	21.3407
Ecuador	2009	732190	0.9324
Ecuador	2009	841940	0.4864
Ecuador	2009	850163	0.7601
Ecuador	2010	732111	14.9076
Ecuador	2010	732190	4.1008

**Source:** Author's calculations from WITS data base. Please note that Ecuador has advantage in the production of CSG Products 732111 and 732190 in 2010.

The Export Specialization index helps us to identify markets for the CSG products in which Ecuador has a comparative advantage. Table III identifies the markets for two of the CSG products in which Ecuador has an advantage in production. They are Chile, Columbia and Peru in 2010. The export specialization (ES) index is a slightly modified RCA index, in which the denominator is usually measured by specific markets or partners. It provides product information on revealed specialization in the export sector of a country and is calculated as the ratio of the share of a product in a country's total exports to the share of this product in imports to specific markets or partners. A Value greater than one indicates advantage of producing and exporting into the identified markets.

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**Table III:** Export Specialization Index for Specialized CSG Products for Ecuador in 2010

Country	Year	ES	Country Code	Country	Ind. Code	ProductDescription
Ecuador	2010	1.1882	CHL	Chile	732111	Solar driven stoves, ranges, grates, cookers (including those with subsidiary boilers for central heating), barbecues, braziers, gas-rings, plate warmers and similar non-electric domestic appliances, and parts thereof, of iron or steel.
Ecuador	2010	1.2300	PER	Peru	732190	Stoves, ranges, grates, cookers (including those with subsidiary boilers for central heating), barbecues, braziers, gas-rings, plate warmers and similar non-electric domestic appliances, and parts thereof, of iron or steel.
Ecuador	2010	1.3135	PER	Peru	732111	Solar driven stoves, ranges, grates, cookers (including those with subsidiary boilers for central heating), barbecues, braziers, gas-rings, plate warmers and similar non-electric domestic appliances, and parts thereof, of iron or steel.
Ecuador	2010	1.9122	COL	Colombia	732111	Stoves, ranges, grates, cookers (including those with subsidiary boilers for central heating), barbecues, braziers, gas-rings, plate warmers and similar non-electric domestic appliances, and parts thereof, of iron or steel.

**Source:** Author's work in WITS

One can also see the greatest product concentration in Ecuador's total exports of CSG products lies in product 732111(0.42). See Table IV below

**Table IV:** Product Concentration(PC) of CSG Products in Ecuador's Exports

COUNTRY	YEAR	IND. CODE	PC
Ecuador	2010	392010	0.0115
Ecuador	2010	392690	0.0124
Ecuador	2010	730820	0.0004
Ecuador	2010	730900	0.0024
Ecuador	2010	732111	0.4214
Ecuador	2010	732190	0.0336
Ecuador	2010	841182	0.0028
Ecuador	2010	841869	0.0029

Ecuador	2010	841950	0.0007
Ecuador	2010	841989	0.0020
Ecuador	2010	847989	0.0222
Ecuador	2010	848340	0.0003
Ecuador	2010	850161	0.0005
Ecuador	2010	850162	0.0008
Ecuador	2010	850163	0.0003
Ecuador	2010	850300	0.0015
Ecuador	2010	850440	0.0016
Ecuador	2010	853710	0.0018
Ecuador	2010	853931	0.0004
Ecuador	2010	903210	0.0011

**Source:** Author's work in WITS

A comparative analysis is done with India. India has comparative advantage in eighteen out of the 64 goods list of the Climate Smart Goods in 2010. These range from disaggregated articles of iron and steel, machine and mechanical appliances, chemical products and electric meters. (See the Table V below and appendix list I for details of the 64 products CSG list)

**Table V:** RCA for CSG Products in India in 2010

Country	Year	Ind. Code	RCA	ProductDescription
India	2010	850300	1.0576	Parts suit. for use solely/princ. with the machines of 85.01/85.02
India	2010	848360	1.1691	Clutches and universal joints (specifically for wind turbines).
India	2010	840490	1.1829	Parts for auxiliary plant for boilers, condensers for steam, vapor power unit.
India	2010	841990	1.2872	Medical, surgical or laboratory stabilizers.
India	2010	850161	1.3221	AC generators not exceeding 75 kVA (specifically for all electricity generating Renewable energy plants).
India	2010	730451	1.3299	Tubes, pipes & hollow profiles (excl. of 7304.10-7304.49), seamless, of circular cross-section, of alloy steel other than stainless steel, cold-drawn/cold-rolled (cold-reduced)
India	2010	841090	1.4621	Hydraulic turbines and water wheels; parts, including regulators.
India	2010	902830	1.6653	Electricity meters, incl. calibrating meters therefor
India	2010	730900	1.7287	Containers of any material, of any form, for liquid or solid waste, including for municipal Or dangerous waste.
India	2010	850231	1.8146	Electric generating sets and rotary converters; wind-powered.
India	2010	840510	1.8382	Producer gas or water gas generators, with or without purifiers.
India	2010	841940	2.0966	Distilling or rectifying plant.



India	2010	841012	2.4608	Hydraulic turbines & water wheels, of a power >1000kW but not >10000kW
India	2010	380210	2.6127	Activated carbon
India	2010	850680	2.7838	Fuel cells use hydrogen or hydrogen-containing fuels such as methane to produce an electric current, through an electrochemical process rather than combustion.
India	2010	840219	2.8811	Vapor generating boilers, not elsewhere specified or included hybrid.
India	2010	730820	3.0511	Towers and lattice masts for wind turbine.
India	2010	841989	4.4443	Machinery, plant or laboratory equipment whether or not electrically heated (excluding furnaces, ovens etc.) for treatment of materials by a process involving a change of temperature.

Source: Author's work Using WITS

Table VI is on Export Specialization Index(>1) helps us to identify markets for the Climate Smart Goods from India. It seems that industrial products-Fuel cells use hydrogen or hydrogen-containing fuels such as methane to produce an electric current, through an electrochemical process rather than combustion is identified for Hong Kong, China. Hydraulic turbines and water wheels of a power not exceeding 1,000 kW for Belgium. Electric generating sets and rotary converters; wind-powered for the United States. Gas turbines of a power not exceeding 5,000 kW for Netherlands. Containers of any material, of any form, for liquid or solid waste, including for municipal or dangerous waste for the United Kingdom and Hydraulic turbines & water wheels, of a power >10000kW for France in 2010.

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**Table VI:** Export Specialization Index for CSG Products for India in 2010 and Identification of Markets for CSG Products of India

Country	Year	ES	Country	Ind. Code	Product Description
India	2010	1.0490	Hong Kong, China	850680	Fuel cells use hydrogen or hydrogen-containing fuels such as methane to produce an electric current, through an electrochemical process rather than combustion
India	2010	1.2273	Belgium	841011	Hydraulic turbines and water wheels of a power not exceeding 1,000 kW
India	2010	1.2381	UnitedStates	850231	Electric generating sets and rotary converters; wind-powered
India	2010	1.2630	Netherlands	841181	Gas turbines of a power not exceeding 5,000 kW
India	2010	1.3634	UnitedKingdom	730900	Containers of any material, of any form, for liquid or solid waste, including for municipal or dangerous waste
India	2010	2.3500	France	841013	Hydraulic turbines & water wheels, of a power >10000kW

**Source:** Author's work using WITS data base

The study works out the product concentration of CSG products in India's Total Exports (Table not shown): Industrial codes PVC or polyethylene plastic membrane systems to provide an impermeable base for landfill sites and protect soil under gas stations, oil refineries, etc. from infiltration by pollutants and for reinforcement of soil (392690) has 0.13 % share in India's total exports. Machinery, plant or laboratory equipment whether or not electrically heated (excluding furnaces, ovens etc.) for treatment of materials by a process involving a change of temperature (841989) has 0.21% share. Photosensitive semiconductor devices, including photovoltaic cells whether or not assembled in modules or made up into panels; light-emitting diodes (854140) has 0.27% share. Parts suit.for use solely/princ. With the machines of 85.01/85.02 (850300) has 0.13% share in total exports of India and 850440(Static Converters) has .16% share.

## 1.2 Ecuador Trade Relations with Other Countries on Total Trade and Specific Products: A Quantitative Analysis using Trade Indices

The above section were on trade in climate smart goods of Ecuador and its comparative analysis with other trading partners. This section will deal with Ecuadorian total trade and some identified specialized products. Such specialized products and markets will be identified using Revealed Comparative Analysis and Export Specialization index at two digits and at 6 digit HS levels given in the WITS data base. Export share in World Exports, Export Diversification and Hirschman-Herfindahl indices for trade concentration, Trade Intensity Index(intensity of trade relations), Market Concentration index(share of markets in total exports), and Trade Complementarity Index will be worked out for Ecuador on the basis of its total trade. Product Concentration will tells us the share of Products (identified specialized products) in Ecuador's total exports.



### 1.2.1 Trade Indices to Understand Ecuador's Integration to World Markets:

We work out export share of Ecuador's total Exports in World Exports from 2002 through 2010. Table VII shows the export share in percentage terms for Ecuador. It has increased from mere 0.0867 % in 2002 to 0.12% in 2010. The positive trend is a healthy sign but is too low to have its substantial presence in the international markets.

**Table VII:** Export Share of Ecuador in World Exports 2002 through 2008

Year	Export Share(%)
2002	0.0867
2003	0.0864
2004	0.0873
2005	0.0998
2006	0.1095
2007	0.1039
2008	0.1224
2009	0.1158
2010	0.1218

Table VIII shows the export share of some of its trading partners. The table will indicate how other countries have progressed as far as their integration is concerned with the outside world.

**Table VIII:** Export Share of Some Selected Trading Partners of Ecuador in 2010

Reporter Name	Share in World Exports
Argentina	0.4656
Bolivia	0.0478
Brazil	1.3737
Chile	0.4916
China	10.9722
Colombia	0.2771
Ecuador	0.1217

European Union	11.9287
India	1.5048
Japan	5.0800
Peru	0.2441
Paraguay	0.0316
United States	8.0979
Venezuela	0.4661

**Source:** Author's work in WITS

China's export share has increased over the years and it has reached to 10.97 % in 2010. EU, Japan and the US share's are respectively 11.92%, 5.08% and 8.09% in 2010. It is to be observed that the share of the developed nations is going down from what it were in 2002 to what it is in 2010 while for most of the developing nations including the Latin American countries, the share although not much is moving up (see Table IX below). China's share has increased at a much faster pace than some of its counterparts (see Table IX below). Mexico share has marginally declined from what it were in 2002 to 2.06% in 2010.

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**Table IX:** Export Share in 2002,2005 and 2010 of Some Selected Countries and Regional Groups

Year	2002	2005	2010
Argentina	0.4377	0.3993	0.4656
Bolivia	0.0235	0.0283	0.0478
Brazil	1.0213	1.1767	1.3736
Canada	4.0663	3.4825	2.6086
Chile	0.2908	0.4035	0.4916
China	5.5874	7.6901	10.9718
Colombia	0.2046	0.2143	0.2771
Ecuador	0.0867	0.0998	0.1217
European Union	14.1610	13.0957	11.9282
Hong Kong, China	3.4684	2.9516	2.7860
India		1.0036	1.5047
Japan	6.8724	5.7526	5.0798
Korea, Rep.	2.7935	2.8766	3.2552
Mexico	2.7620	2.1613	2.0660
Malaysia	1.5992	1.4129	1.3777
Peru	0.1318	0.1731	0.2441
Paraguay		0.0167	0.0316
Singapore	2.0735	2.2347	2.2756
Thailand	1.1363	1.0977	1.3595
Uruguay	0.0320	0.0344	
United States	11.5305	8.8747	8.0976
Venezuela			0.4661

**Source:** Author's work on WITS

Table X works out the market concentration of Ecuador's exports. US has been the top most importers of Ecuador's Exports in 2002, 2005 and 2010. However, it is also observed that the share of the US has declined from 40% or more to around 34 % of Ecuador's exports in 2010. The shares of Ecuador's Latin American partners have increased in 2010 from what it were in 2002. Peru ranks second in terms of Ecuador's exports in all years 2002, 2005 and 2010. Venezuela has become the third important importer. The third rank was of Columbia in 2002. Columbia has become the fifth important trading partner in 2010 after Chile. China has gained entry in top 12 importers of Ecuador while Japan's share in 2010 has increased from what it were in 2002. The table shows the regional orientation of Ecuador's export.

**Table X:** Market Concentration (Share of Each Markets) of Ecuador's Exports, 2002, 2005 and 2010: Top 12 Importers

PartnerName	MC	Rank	Year	Partners Name	MC	Rank	Year	Partners Name	MC	Rank
Peru	7.4280	2	2005	Peru	8.8040	2	2010	Peru	7.6363	2
Colombia	7.1903	3	2005	United States	50.0689	1	2010	Venezuela	5.5687	3
Korea, Rep.	5.8733	4	2005	Colombia	4.7752	3	2010	Chile	4.8407	4
Italy	5.7441	5	2005	Italy	3.8621	4	2010	Colombia	4.5344	5
United States	40.8605	1	2005	Chile	3.0526	5	2010	United States	34.7486	1
Germany	3.4148	6	2005	Spain	2.1233	6	2010	Italy	3.3300	6
Japan	1.9409	7	2005	Germany	2.0058	7	2010	Japan	2.2983	7
Netherlands	1.7229	8	2005	Netherlands	1.9915	8	2010	Spain	2.0252	8
Chile	1.4764	9	2005	Venezuela	1.2390	9	2010	Netherlands	1.8957	9
Belgium	1.4222	10	2005	France	0.9109	10	2010	China	1.8796	10
Spain	1.3040	11	2005	Brazil	0.9019	11	2010	Germany	1.8311	11
Venezuela	1.2840	12	2005	Belgium	0.7828	12	2010	Belgium	1.3974	12

**Source:** Author's work in WITS

The study works out RCA index for all the 2 digit industries (out of total of all 96 industries at two digit level, HS system, given in WITS<sup>7</sup>). Table XI gives the RCA index for industries for which the value of the index is greater than one in 2009. 20 Industries are identified. Ecuador seems to have comparative advantage (produce goods at lower relative costs and prices) in production of 20 industries out of 96 industries. These are potential sector for inviting FDI into Ecuador. Table XII gives the list of industries with their names. Appendix Table III lists the trade of Ecuador of such 20 specialized products with the MERCOSUR and ANDEAN regional group. Ecuador has positive trade balance with the above mentioned regional groups, China, Mexico, United States, Japan and India.

**Table XI:** Identification of Specialized Products: RCA Index for Ecuador in 2009

Industry Code	Revealed Comparative Analysis
2 Digit Industry	RCA
24	1.0263
65	1.1843
17	1.2034

<sup>7</sup> See Appendix II for list of all 2 digit industries

78	1.2807
14	1.4324
07	1.5326
09	1.5355
44	1.5724
23	1.7712
18	10.7363
03	11.9698
16	16.4153
21	2.0354
06	27.5896
08	27.8566
15	3.6040
27	4.0286
20	4.3668
53	4.9427
58	5.2376

Source: author's work on WITS

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**Table XII:** Identified 20 Specialized Products (through RCA analysis) of Ecuador, 2009

HS 2002 Product Code	HS 2002 Product Description
03	Fish & crustacean, mollusc & other aquatic invert
06	Live tree & other plant; bulb, root; cut flowers
07	Edible vegetables and certain roots and tubers.
08	Edible fruit and nuts; peel of citrus fruit or me
09	Coffee, tea, mati and spices.
14	Vegetable plaiting materials; vegetable products
15	Animal/veg fats & oils & their cleavage products;
16	Prep of meat, fish or crustaceans, molluscs etc
17	Sugars and sugar confectionery.
18	Cocoa and cocoa preparations.
20	Prep of vegetable, fruit, nuts or other parts of
21	Miscellaneous edible preparations.
23	Residues & waste from the food indust; prepr ani
24	Tobacco and manufactured tobacco substitutes
27	Mineral fuels, oils & product of their distillati
44	Wood and articles of wood; wood charcoal.
53	Other vegetable textile fibres; paper yarn & wove
58	Special woven fab; tufted tex fab; lace; tapestri
65	Headgear and parts thereof.
78	Lead and articles thereof.

**Source:** Author's work in WITS

Table XIII below gives the RCA index for Ecuador in 2002 , 2005 and 2010 to indicate whether there is any substantial shift of comparative advantage in production of goods.

**Table XIII:** RCA Advantage of Ecuador in 2002, 2005 and 2010

Year	Industry Code	RCA	Year	Industry Code	RCA	Year	Industry Code	RCA
2002	12	1.1637	2005	44	1.0141	2010	56	1.0449
2002	14	1.1903	2005	24	1.0381	2010	17	1.0864
2002	44	1.2165	2005	78	1.0458	2010	78	1.1264



2002	65	1.3479	2005	69	1.1481	2010	07	1.3540
2002	15	1.7219	2005	09	1.5366	2010	65	1.4449
2002	69	1.7308	2005	07	1.9223	2010	44	1.7301
2002	09	1.9534	2005	16	17.8527	2010	09	1.7969
2002	03	11.6883	2005	53	2.1746	2010	23	1.9058
2002	18	13.6834	2005	21	2.3173	2010	03	12.6097
2002	07	2.0565	2005	17	2.3346	2010	16	14.2116
2002	21	2.3609	2005	15	2.4418	2010	21	2.0172
2002	17	2.8140	2005	08	24.1755	2010	14	2.0453
2002	16	24.9969	2005	06	27.5877	2010	15	2.6877
2002	53	3.4165	2005	20	4.1036	2010	08	24.0915
2002	06	36.6455	2005	27	5.0944	2010	06	28.5055
2002	20	4.2868	2005	18	8.5724	2010	59	3.4449
2002	08	43.8400	2005	03	9.8650	2010	53	3.6912
2002	27	5.8441				2010	27	4.2451
						2010	20	4.2816
						2010	18	9.6605

**Source:** Author's work in WITS. Please see Appendix III for the entire list of HS2002 Product codes mentioned in the Table above.

It seems that industry code 56(Wadding, Filtered and Non-Woven Yarns) and 59(Impregnated, Coated, Covered, Laminated Textile Fabrics) are added in 2010 while industry code 24(Tobacco and Manufactured Tobacco Substitutes), 69(Ceramic Products), 58(Special Woven Fabrics and Tufted Textile Fabrics) and 12(Oilseeds, Olage, Fruit) were not present in 2010 list. There were 18 industries in which Ecuador had an advantage in 2002, 17 in 2005 and 20 in 2010. There is not much substantial observational shift of comparative advantage from 2002 through 2010.

RCA is worked for industries disaggregated at 6 digit levels. Appendix Table IV and V lists 213 and 238 industries out of more than 5300 industries in which Ecuador has comparative advantage for production of industries disaggregated at 6 digit level in 2009 and 2010 respectively. Appendix Table XI lists the products in which Ecuador has advantage at 6 digit disaggregated level. For the complete list of more than 5300 industries disaggregated one would need to log on to the WITS. It is also available with author on demand.

Table XIV gives the RCA figures for 20 specialized industries in all years from 2002 through 2010. All industries except industries, 23(Residues and Waste from Food Industries), 24(Tobacco and Manufactured Tobacco Substitutes), 58(Special Woven Fabrics, tufted textile fabrics, lace, tapestries, trimmings, embroidery, 65(Headgears and Parts thereof)

and 78 (Lead and articles thereof) show uniform advantage in all years from 2002 through 2010. The figures show that Ecuador gained advantage in industry code 78 in 2009. Before that year, the value of RCA for industry code 78 was less than one. For industry code 58 one can see that RCA has been greater than one in 2008 and 2009 only. One may conclude that for all other industries, 23, 24 and 65, Ecuador has in some years lost its comparative advantage while in some other years it has gained advantage. Ecuador needs to focus attention on such industries so that they remain in advantage permanently. The study identifies the following industries for further diversifying industrial structure of Ecuador for its gain in future. These are Industrial Codes- 61(Articles of apparel and clothing accessories, knitted or crocheted), 62(Articles of apparel and clothing accessories, not knitted or crocheted),42( Articles of leather; saddlery and harness; travel goods, handbags and similar containers; articles of animal), 90(Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus; parts and accessories thereof), 84(Electronic appliances), 85(Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles),87 (Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof), 83 (Miscellaneous articles of base metal), 73 (Articles of iron or Steel), 69 (Ceramic products), 30 (Pharmaceutical products),29(Organic chemicals), Climate Smart Goods- 840510(Clean Coal Technologies), 850720,853710 and 854140(Solar Photovoltaic systems), 848340 and 848360( Wind Power Technologies), 853931(Energy Efficient Lighting), among others. In services sector, Tourism, IT and ITES, Hospital services, Education and Training Services( training of English), Cultural Services, Knowledge Processing Outsourcing and Financial Analytics, Infrastructure services have lot of potential of bring the necessary foreign exchange and stability into the system .Ecuador need to diversify into the following industries and services for higher and more stable export earnings, job creation and learning effects, and the development of new skills and infrastructure that would facilitate the development of even newer export products.

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**Table XIV:** Revealed Comparative Advantage Index for Ecuador 2002 through 2010 for 20 Specialized Products

Producto	2002	2003	2004	2005	2006	2007	2008	2009	2010
03	11.6883	10.5253	9.3944	9.8650	11.0741	11.1779	11.1140	11.9698	12.6097
06	36.6455	29.8957	31.1715	27.5877	25.9361	22.9925	24.7057	27.5896	28.5055
07	2.0565	1.4151	1.6098	1.9223	1.6855	1.8363	1.5647	1.5326	1.3540
08	43.8400	37.6461	30.4610	24.1755	23.0958	22.6919	20.7115	27.8565	24.0915
09	1.9534	1.5805	1.5842	1.5366	1.5669	1.0087	0.7538	1.5355	1.7969
14	1.1903	1.2500	1.1539	0.9840	1.0566	1.0886	1.2185	1.4324	2.0453
15	1.7219	2.0961	2.1892	2.4418	2.0456	3.0358	2.9578	3.6040	2.6877
16	24.9969	24.5522	17.5857	17.8527	18.3532	17.5232	19.6279	16.4153	14.2116
17	2.8140	3.1505	3.1277	2.3346	2.7964	1.8538	1.9903	1.2034	1.0864
18	13.6834	11.5253	9.2092	8.5724	7.1464	8.4223	7.6239	10.7364	9.6605
20	4.2868	4.7454	4.3384	4.1036	4.4902	4.1451	3.3232	4.3667	4.2816
21	2.3609	2.9730	3.1367	2.3173	2.0185	2.8596	2.1022	2.0354	2.0172
23	0.9489	1.0253	0.9881	0.9134	1.4459	1.7928	1.3661	1.7712	1.9058
24	0.9209	0.8379	0.9702	1.0381	0.9252	1.1001	0.7755	1.0263	0.9833
27	5.8441	5.2890	6.0168	5.0944	4.3479	4.9464	3.9622	4.0286	4.2451
44	1.2165	1.3933	1.1123	1.0141	1.0197	1.2192	1.2865	1.5724	1.7301
53	3.4165	2.8811	2.9209	2.1746	1.9975	2.3160	4.3085	4.9427	3.6912
58	0.0227	0.0257	0.0546	0.0376	0.0667	0.0585	1.5798	5.2376	0.7620
65	1.3479	1.1471	1.2946	0.9764	0.9187	0.8605	0.7522	1.1843	1.4449
78	0.2037	0.3321	0.3734	1.0458	0.2919	0.8428	0.6196	1.2807	1.1264

If one does a similar RCA analysis for India in 2009 to find its specialized products one gets a list of 37 industrial products out of list of 96 industries disaggregated at 2 digit levels in 2009. 40 industries are identified in 2010 using RCA analysis (see Table XV below).

**Table XV** below lists the industries in which India has comparative advantage in 2009 and 2010.

Serial Number	Country	Year	HS 2 Digit Industrial Code(2002)	RCA	Country	Year	HS 2 Digit Industrial Code(2002)	RCA	Serial Number
1	India	2009	78	1.0026	India	2010	12	1.0708	1
2	India	2009	74	1.0343	India	2010	07	1.1670	2
3	India	2009	08	1.0827	India	2010	72	1.2150	3
4	India	2009	27	1.0898	India	2010	64	1.2222	4
5	India	2009	72	1.1029	India	2010	02	1.2277	5

6	India	2009	07	1.1615	India	2010	78	1.2621	6
7	India	2009	64	1.2663	India	2010	27	1.3219	7
8	India	2009	58	1.2734	India	2010	36	1.3759	8
9	India	2009	73	1.3178	India	2010	58	1.3861	9
10	India	2009	36	1.4148	India	2010	28	1.4906	10
11	India	2009	32	1.4203	India	2010	32	1.5344	11
12	India	2009	03	1.4665	India	2010	29	1.5960	12
13	India	2009	29	1.6272	India	2010	17	1.6227	13
14	India	2009	68	1.7851	India	2010	89	1.6481	14
15	India	2009	89	1.8117	India	2010	24	1.7216	15
16	India	2009	24	1.8144	India	2010	73	1.7482	16
17	India	2009	41	1.9024	India	2010	68	1.7693	17
18	India	2009	42	2.2586	India	2010	41	1.7829	18
19	India	2009	23	2.3032	India	2010	61	1.8412	19
20	India	2009	25	2.3677	India	2010	42	1.8722	20
21	India	2009	61	2.3716	India	2010	03	1.9796	21
22	India	2009	79	2.5915	India	2010	25	2.0783	22
23	India	2009	10	2.6178	India	2010	74	2.3475	23
24	India	2009	62	2.8483	India	2010	10	2.4140	24
25	India	2009	55	3.3991	India	2010	23	2.4639	25
26	India	2009	67	3.5983	India	2010	26	2.5908	26
27	India	2009	09	3.6304	India	2010	62	2.6105	27
28	India	2009	54	3.6755	India	2010	67	2.9956	28
29	India	2009	26	3.8056	India	2010	79	3.3566	29
30	India	2009	63	3.8076	India	2010	55	3.5829	30
31	India	2009	14	3.9922	India	2010	54	3.6503	31
32	India	2009	53	5.1175	India	2010	63	4.1009	32
33	India	2009	52	5.4369	India	2010	09	4.1532	33
34	India	2009	13	5.5958	India	2010	71	5.1608	34
35	India	2009	57	5.8824	India	2010	14	5.6180	35
36	India	2009	50	6.6331	India	2010	57	6.3270	36
37	India	2009	71	7.0158	India	2010	50	6.8136	37
					India	2010	53	7.7707	38
					India	2010	52	8.3618	39
					India	2010	13	8.5674	40

Source; Author's work in WITS

India's Advantage lies in 37 Products from industries in Agriculture, Industry and Petroleum in 2009. Such Products include Natural/Cultured Pearls, Precious Stones and Metals, Silk, Carpets and other Textile Floor Covering, Articles of Apparel and Clothing, Mineral Fuels, Oils and Products of Distillery, Iron and Steel, Organic Chemicals, Ships, boats and Floating Structures, Zinc and articles there of, Ores, Slag and ash, Cotton, Coffee, Tea and Spices, Articles of Leather; saddlery, Raw hides and Skins, Tobacco and manufactured tobacco products, Fish and Crustacean,, Edible Fruits, vegetables, among others. These are potential sectors for inviting FDI into India.

Common Industries where in Ecuador and India have  $RCA > 1$  in 2009 and have potential for trade (may be intra industry trade). These include Lead and articles there of (78), Edible fruit and nuts; peel of citrus fruit or me (08), Mineral fuels; oils and products of distillery (27), Edible vegetables and certain roots and tubers (07), Special woven fabrics; tufted textile fabrics; lace; tapestries (58), Fish and Crustacean; mollusk and other aquatic invertebrates (03), Tobacco and Manufactured tobacco substitute (24), Residues and waste from the food industry (23), Coffee; Tea and Spices (09) and Vegetable plaiting materials; vegetable products (14)<sup>8</sup>.

8 Currently, Ecuador's exports include not only petroleum, banana, shrimp, coffee and cacao but also a series of new products, which have won widespread acceptance in international markets. These include *fresh fruits*: strawberries, mango, passion fruit, melon, papaya, pineapple, etc.; *processed fruits*: preserves, dried fruits, juices, concentrates, candied fruits, marmalades and jellies; *flowers*: roses, baby's breath, carnations, chrysanthemums, etc.; *sea food*: shrimp, jumbo shrimp, fresh fish, tuna; *vegetables*: string beans, asparagus, artichokes, peas, cauliflower, palm heart, broccoli, etc.; *herbs and plants*; herbals and medicinal teas: mint, boldo, retania, valerian, etc.; *industrial products*: ceramics ; wood derivatives in bulk, board, sheets and plywood ; textile products etc. ; *craft products*: T-shirts, tagua figurines and buttons, palmetto straw hats, decorative ceramics, balsa wood figures, etc.. **Exports to India include** Tropical wood, Newsprint, Crude Oil, Coffee, Tea, Spices, Chocolate & Chocolate products, Waste & Scrap of iron and steel. **Imports from India include** Vehicles and accessories, Organic chemicals, Auto tyres, Misc. chemical products, Plastic products, Iron/steel products, Pharmaceuticals products etc. (Source for this information is Ecuadorian Embassy in New Delhi, India)

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Table XVI works out export specialization index for Ecuador on the basis of 20 specialized products of Ecuador in 2002, 2005 and 2010. The index helps us to identify markets for the 20 specialized products of Ecuador.

**Table XVI:** Export Specialization Index: Identification of Markets for 20 Specialized Products in 2002, 2005 and 2010.

Year	ES	Country	Ind.	Year	ES	Country	Ind.	Year	ES	Country	Ind.
2002	1.0886	Colombia	18	2005	1.0119	Japan	53	2010	1.0102	Japan	53
2002	1.1415	Germany	18	2005	1.0767	Canada	06	2010	1.0206	Chile	03
2002	1.2038	Japan	18	2005	1.1295	Chile	06	2010	1.0864	United States	20
2002	1.2067	Venezuela	16	2005	1.1824	Brazil	16	2010	1.1345	Argentina	08
2002	1.3463	Netherlands	06	2005	1.2247	Chile	16	2010	1.1418	Italy	16
2002	1.4742	Mexico	17	2005	1.2937	Netherlands	06	2010	1.1808	United States	16
2002	1.5152	Colombia	16	2005	1.2956	Colombia	16	2010	1.1946	Canada	06
2002	1.5397	United States	20	2005	1.3906	Italy	16	2010	1.2617	Chile	06
2002	1.5545	Brazil	17	2005	1.4123	United States	20	2010	1.2782	Germany	08
2002	1.6195	Canada	06	2005	1.4631	Germany	08	2010	1.2917	Brazil	17
2002	1.6952	Chile	16	2005	1.7296	Netherlands	16	2010	1.3809	Venezuela	16
2002	1.7209	Belgium	08	2005	1.7347	Chile	08	2010	1.4493	Colombia	16
2002	1.8491	Japan	08	2005	2.1660	United Kingdom	53	2010	1.4777	Belgium	08
2002	2.3358	Chile	08	2005	3.0202	United States	27	2010	1.5364	Mexico	18
2002	2.5269	United States	27	2005	3.3201	United States	18	2010	1.6469	Chile	08
2002	2.5850	Germany	08	2005	3.3608	Spain	16	2010	1.8541	United States	27
2002	2.6357	Italy	16	2005	3.6682	United States	16	2010	1.8943	Italy	14
2002	2.8243	Spain	16	2005	3.8911	Italy	08	2010	2.1967	Spain	16
2002	3.3827	United Kingdom	53	2005	5.5150	United States	03	2010	2.2576	United States	18
2002	5.7679	United States	18	2005	7.8791	United States	08	2010	2.2747	Brazil	16
2002	7.6142	Italy	08	2005	17.8697	United States	06	2010	2.8907	United Kingdom	53
2002	8.8523	United States	03					2010	3.5259	Italy	08



2002	12.3736	United States	16					2010	5.3344	United States	03
2002	21.0895	United States	08					2010	6.5370	United States	08
2002	26.7303	United States	06					2010	12.3230	United States	06

**Source:** Author's work on WITS. 20 specialized products can be identified from the Appendix List II below or Table XII above.

The table indicates that Ecuador is targeting the US markets in 2010 for exports of Fish, Cut Flowers and Live Trees, Edible Fruits, Preparation of Meat and Fish, Cocoa and Cocoa Preparations and Mineral fuels and products from distilleries, Japan and the United Kingdom for Other Vegetable Textile Fibres, Chile for Fish, Fruits and Live trees and Cut flowers, Germany and Italy for Edible Fruits and Nuts, Spain for Preparation of Meat and Fish, Brazil for Preparation of Meat and Fish and Sugar and Sugar Confectionaries, Italy for Vegetable Plaiting Material and for Preparation of Meat and Fish, Columbia and Venezuela for Preparation of Meat and Fish, Canada for Live trees, Bulb root and Cut flowers, Mexico for Cocoa and Cocoa Preparations, among others. Since 2002, Ecuador has probably lost its competitiveness since 2002 in providing Cocoa and Cocoa Preparations and Preparation of Vegetables and Fruits in the US Markets.

Table XVII given below gives the Trade Complementarity Index for Ecuador based on trade data available at 6 digit disaggregated levels for years 2002, 2005, 2009 and 2010. The index shows how well the structures of a country's imports and exports match. The index is zero when no goods are exported by one country or imported by the other and 100 when the export and import shares exactly match. It is observed that Lao PDR has the highest value of the index for years 2002(61.01), 2009(56.45) and 2010(54.01). Bolivia has the highest value in 2005(56.45). Hence, it seems that both these countries, among all, have the matching of their products with Ecuador. In 2009, Columbia stood second(47.28) after Lao followed by East Asian Country Cambodia, followed by Bolivia, Malta, Lithuania, Netherlands, Italy, India and then Chile. In 2010, Lao tops the list followed by Cyprus, Slovenia, Estonia, Argentina, Paraguay, Cambodia, Netherlands, India, Bulgaria, Finland, Italy and Peru. Bolivia, Chile, Peru, Argentina, Brazil, Paraguay, Venezuela and Colombia figure up in top 15 countries on the list based on decreasing value of the index in at least one of the years- 2002,2005,2009 and 2010. Also, one finds that except for few countries the position of trading partners in terms of the indices is not fixed. There may be a case for aligning Ecuador with the Baltics in Europe and some it's trading partners like Netherlands, Denmark, Spain and Italy and/ Or some of the East Asian Nations like Lao and Cambodia or with the Medditarrean Countries like Malta and Cyprus. In Latin America, Ecuador may have bilateral and regional economic agreements with Bolivia, Peru, Columbia and Chile. The negotiations are generally done at 6 Digit level. One can always work out the Trade Complementarity Index at 2 digit levels which may show entirely different trading partners which have matching of products with Ecuador.

**Table XVII:** Trade Complementarity Index based on trade data at 6 Digit Industry Level Disaggregation in 2002, 2005, 2009 and 2010

Year	Partner Name	TC	Year	Partner Name	TC	Year	Partner Name	TC	Year	Partner Name	TC
2002	Lao PDR	61.0134	2005	Bolivia	56.4540	2010	Lao PDR	54.0195	2009	Lao PDR	50.3504
2002	Cambodia	51.4937	2005	Lao PDR	54.7768	2010	Cyprus	52.9170	2009	Colombia	47.2810

2002	Venezuela	48.1497	2005	Cambodia	51.7356	2010	Slovenia	49.9911	2009	Cambodia	44.2188
2002	Cyprus	46.2069	2005	Lithuania	42.6484	2010	Estonia	49.7902	2009	Bolivia	42.4711
2002	Bolivia	44.6476	2005	Japan	39.3796	2010	Argentina	48.0829	2009	Malta	35.5169
2002	Paraguay	44.6113	2005	Cyprus	39.2230	2010	Paraguay	47.3708	2009	Lithuania	33.3916
2002	Brazil	44.1044	2005	India	36.4010	2010	Cambodia	47.3468	2009	Netherlands	33.1510
2002	Lithuania	41.7279	2005	Italy	35.5024	2010	Netherlands	34.3455	2009	Italy	31.5086
2002	Chile	39.5744	2005	Peru	34.5452	2010	India	33.3082	2009	India	31.0422
2002	Malta	37.7396	2005	Netherlands	34.5101	2010	Bulgaria	32.8666	2009	Chile	31.0134
2002	Estonia	37.6796	2005	Chile	33.4700	2010	Finland	31.4221	2009	Bulgaria	30.9006
2002	Italy	37.4275	2005	Bulgaria	32.7020	2010	Italy	30.9372	2009	Peru	29.6508
2002	Netherlands	37.1014	2005	Korea, Rep.	32.4110	2010	Peru	30.1552	2009	Cyprus	29.1569
2002	Peru	37.0375	2005	Romania	30.9658	2010	Malta	30.0624	2009	Finland	28.9188
2002	India	36.0716	2005	Slovak Republic	30.8191	2010	Lithuania	29.8489	2009	Greece	28.3108
2002	Portugal	35.3516	2005	France	30.5101	2010	Chile	29.8122	2009	Poland	28.0446
2002	Slovak Republic	35.3347	2005	Poland	30.1079	2010	Venezuela	29.4319	2009	France	27.5868
2002	Romania	35.2127	2005	Belgium	29.8745	2010	Greece	29.2401	2009	Korea, Rep.	27.1422
2002	Luxembourg	35.2058	2005	Spain	29.7165	2010	Poland	29.0683	2009	United Kingdom	27.1411
2002	France	35.0698	2005	Greece	29.6118	2010	United Kingdom	28.7446	2009	Belgium	27.0256
2002	Vietnam	35.0163	2005	Thailand	29.4536	2010	Belgium	27.8698	2009	Sweden	26.6918
2002	Finland	34.9237	2005	Portugal	29.3838	2010	Sweden	27.5862	2009	Vietnam	26.5145
2002	Japan	34.8780	2005	Malta	28.8375	2010	United States	26.6851	2009	Luxembourg	25.8696
2002	Korea, Rep.	34.8741	2005	United Kingdom	28.6780	2010	Vietnam	26.6692	2009	Denmark	25.7351
2002	Belgium	34.8726	2005	Sweden	27.8344	2010	Portugal	26.6562	2009	Spain	25.6851
2002	Uruguay	34.2956	2005	Singapore	27.7067	2010	Korea, Rep.	26.5278	2009	Japan	25.3574
2002	Spain	34.2752	2005	Slovenia	27.6523	2010	France	26.3763	2009	Portugal	25.3443
2002	Poland	34.2405	2005	Indonesia	27.6208	2010	Luxembourg	26.3489	2009	United States	25.3161
2002	Indonesia	34.1628	2005	Finland	27.4686	2010	Spain	26.1393	2009	Brazil	25.3120
2002	Bulgaria	33.9150	2005	Venezuela	27.3782	2010	Denmark	26.0023	2009	Austria	25.1122
2002	Malaysia	33.8085	2005	Germany	26.9713	2010	Slovak Republic	25.9055	2009	Estonia	24.9582
2002	Slovenia	33.6927	2005	Brazil	26.9361	2010	Japan	25.3885	2009	Thailand	24.3163
2002	Singapore	33.5490	2005	United States	26.8516	2010	Brazil	25.3841	2009	Indonesia	24.1075
2002	Latvia	33.2424	2005	Luxembourg	26.8319	2010	Austria	25.2813	2009	Singapore	24.0107
2002	Hungary	33.0848	2005	Uruguay	26.6955	2010	Ireland	24.7865	2009	Ireland	23.9115
2002	Sweden	33.0805	2005	Denmark	26.6372	2010	China	24.6776	2009	Germany	23.8560
2002	Ireland	32.8737	2005	Ireland	26.5930	2010	Germany	24.6096	2009	China	23.8382

2002	United Kingdom	32.8695	2005	Vietnam	26.4480	2010	Bolivia	24.4082	2009	Romania	23.4351
2002	Argentina	32.8128	2005	Austria	26.4369	2010	Romania	24.1219	2009	Slovenia	23.3504
2002	Denmark	32.6524	2005	Czech Republic	26.0536	2010	Indonesia	23.6602	2009	Uruguay	23.2420
2002	Germany	32.6136	2005	China	26.0044	2010	Colombia	23.1250	2009	Slovak Republic	23.1089
2002	Hong Kong, China	32.2943	2005	Latvia	25.8309	2010	Canada	23.0250	2009	Latvia	22.9167
2002	Greece	32.2745	2005	Argentina	24.5830	2010	Hungary	22.3593	2009	Canada	22.3990
2002	Austria	31.9258	2005	Hungary	24.3755	2010	Malaysia	22.3378	2009	Venezuela	21.5366
2002	Czech Republic	31.8645	2005	Estonia	24.2703	2010	Czech Republic	22.2361	2009	Czech Republic	21.2724
2002	China	31.8588	2005	Canada	23.5301	2010	Thailand	22.2055	2009	Argentina	21.0050
2002	Colombia	31.5386	2005	Colombia	23.2440	2010	Singapore	22.0753	2009	Hungary	20.9640
2002	Thailand	31.0234	2005	Paraguay	22.5280	2010	Latvia	20.7431	2009	Malaysia	20.0406
2002	United States	30.3166	2005	Hong Kong, China	21.3572	2010	Uruguay	20.5201	2009	Paraguay	19.6461
2002	Canada	28.3059	2005	Mexico	19.8466	2010	Hong Kong, China	19.0107	2009	Hong Kong, China	17.1633
2002	Mexico	27.9528	2005	Malaysia	19.6995	2010	Mexico	18.4531	2009	Mexico	17.0487

Source: Author's work in WITS



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**Table XVIII gives the Trade Intensity Index for Ecuador in 2002, 2005 and 2010.** An index of more (less) than one indicates a bilateral trade flow that is larger (smaller) than expected, given the partner country's importance in world trade. We find that in year 2010, Peru, Venezuela, United States, Uruguay, Bolivia, Columbia, Chile, Argentina, Italy and Spain, all had intense trade relations with Ecuador. All other countries listed in 2010 have potential to increase trade relations with Ecuador (have values of index less than one). To name few are Japan, Malaysia, Belgium, Netherlands, France, Mexico, Germany, among others. The list of 2010 is common with other years except one finds that Ecuador does not have intense trade relations with Brazil in 2010. Ecuador may need to rethink their trade policies with the fast growing Brazil and South Korea.

**Table XVIII:** Trade Intensity Index (T) for Ecuador in 2002, 2005 and 2010

Year	Partner Name	T	Year	Partner Name	T	Year	Partner Name	T
2002	Peru	72.0119	2005	Bolivia	3.9427	2010	Peru	39.8306
2002	Chile	6.1849	2005	United States	3.3016	2010	Venezuela	21.9345
2002	Venezuela	5.9556	2005	Colombia	27.0774	2010	United States	2.9376
2002	Colombia	43.3249	2005	Chile	11.1877	2010	Uruguay	2.7358
2002	Bolivia	3.9945	2005	Argentina	1.6583	2010	Bolivia	2.2920
2002	Korea, Rep.	3.0628	2005	Brazil	1.2607	2010	Colombia	16.6058
2002	Argentina	2.3994	2005	Italy	1.0587	2010	Chile	13.6759
2002	United States	2.3490	2005	Spain	0.7659	2010	Argentina	1.8007
2002	Paraguay	2.3118	2005	Uruguay	0.7494	2010	Italy	1.0699
2002	Italy	1.5450	2005	Netherlands	0.5363	2010	Spain	1.0041
2002	Uruguay	0.6832	2005	India	0.3456	2010	Japan	0.6947
2002	Spain	0.4948	2005	Mexico	0.3268	2010	Malaysia	0.6529
2002	Belgium	0.4879	2005	Latvia	0.2976	2010	Belgium	0.5871
2002	Netherlands	0.4711	2005	Belgium	0.2820	2010	Netherlands	0.5164
2002	Japan	0.4702	2005	Germany	0.2730	2010	France	0.2824
2002	Germany	0.4320	2005	Canada	0.2015	2010	Mexico	0.2818
2002	Brazil	0.3893	2005	France	0.1834	2010	Germany	0.2709
2002	Poland	0.2778	2005	Slovenia	0.1729	2010	Poland	0.2664
2002	Mexico	0.2241	2005	Japan	0.1640	2010	China	0.2440
2002	United Kingdom	0.1841	2005	Poland	0.1597	2010	Brazil	0.2378
2002	Portugal	0.1694	2005	Paraguay	0.1522	2010	Singapore	0.2113
2002	France	0.1687	2005	United Kingdom	0.1473	2010	Portugal	0.1968
2002	Canada	0.1368	2005	Portugal	0.0850	2010	Bulgaria	0.1867

2002	Romania	0.1244	2005	Denmark	0.0714	2010	Paraguay	0.1861
2002	China	0.0710	2005	Sweden	0.0296	2010	Romania	0.1522
2002	Indonesia	0.0594	2005	Indonesia	0.0281	2010	Lithuania	0.1383
2002	Greece	0.0410	2005	Czech Republic	0.0236	2010	Greece	0.1353
2002	Sweden	0.0372	2005	Estonia	0.0182	2010	Denmark	0.1351
2002	Finland	0.0281	2005	Hong Kong, China	0.0182	2010	Slovenia	0.1287
2002	Luxembourg	0.0272	2005	Korea, Rep.	0.0162	2010	Canada	0.1248
2002	India	0.0216	2005	Finland	0.0154	2010	United Kingdom	0.1241
2002	Hong Kong, China	0.0212	2005	Greece	0.0146	2010	Sweden	0.0468
2002	Denmark	0.0177	2005	Slovak Republic	0.0139	2010	Finland	0.0385
2002	Bulgaria	0.0135	2005	Vietnam	0.0134	2010	India	0.0346
2002	Vietnam	0.0123	2005	China	0.0132	2010	Vietnam	0.0321
2002	Czech Republic	0.0089	2005	Lithuania	0.0125	2010	Austria	0.0316
2002	Slovak Republic	0.0086	2005	Ireland	0.0105	2010	Slovak Republic	0.0297
2002	Austria	0.0073	2005	Malta	0.0080	2010	Ireland	0.0258
2002	Slovenia	0.0066	2005	Bulgaria	0.0079	2010	Korea, Rep.	0.0248
2002	Ireland	0.0047	2005	Thailand	0.0073	2010	Estonia	0.0197
2002	Thailand	0.0046	2005	Singapore	0.0064	2010	Hong Kong, China	0.0167
2002	Singapore	0.0034	2005	Luxembourg	0.0060	2010	Latvia	0.0132
2002	Hungary	0.0028	2005	Austria	0.0058	2010	Malta	0.0107
2002	Lithuania	0.0025	2005	Romania	0.0054	2010	Indonesia	0.0090
2002	Latvia	0.0013	2005	Malaysia	0.0022	2010	Thailand	0.0076
2002	Estonia	0.0008	2005	Hungary	0.0002	2010	Cyprus	0.0061
2002	Malaysia	0.0002	2005	Cyprus	0.0000	2010	Czech Republic	0.0038
						2010	Luxembourg	0.0035
						2010	Hungary	0.0015

Source: Author's work in WITS



The **export diversification (DX) index** for a country is defined as:  $DX_j = (\sum |h_{ij} - x_i|) / 2$  Where  $h_{ij}$  is the share of commodity  $i$  in the total exports of country  $j$  and  $x_i$  is the share of the commodity in world exports. The lower the index, the less concentrated are a country's exports. Table XVIII gives the Export Diversification index for Ecuador based on trade data disaggregated at 2 Digit and 6 Digit levels. The figures are on the higher side indicating the concentrated trade of Ecuador. Product concentration index below will confirm that more than half of Ecuador's exports are of Industry 27 (Mineral Fuel and Products from the Distillery). Ecuador needs to rethink its trade policy by diversifying its trade into manufactured products and more diversified production structure. Information Technology services, Tourism, Manufacturing of Automobiles, Industrial and Textile Goods and Chemicals are some areas where Ecuador can think of developing niche and cater to European markets. Production and Trade in Climate Smart Goods is another area of focus.

**Table XVIII:** Export Diversification Index for Ecuador in 2002, 2005 and 2010 based on trade data at 2 and 6 Digit Level Disaggregation

ReporterISO3	Year	DX	ReporterISO3	Year	DX
ECU	2002	0.6549	ECU	2002	0.7609
ECU	2005	0.6983	ECU	2005	0.7453
ECU	2010	0.7020	ECU	2010	0.7012
6digit			2digit		

Source: Author's work in WITS



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Table XVIX and Table XX shows some conflicting trends for Ecuador from 2002 till 2010. While at 2 digit level the Export Diversification index shows that exports are becoming more diversified, but at the 6 digit disaggregation the index indicates that Ecuador trade is becoming more concentrated. Whatever it may be the tariff liberalization at the international level are done at 6 digit levels. Ecuador needs to keep focusing on diversifying its production and trade structure.

**Table XX:** Export Diversification Index based on trade data at 6 Digit Level of Some Selected Countries in 2002, 2005 and 2010

Country	2002	2005	2010
Argentina	0.6691	0.6292	0.6492
Austria	0.4319	0.4378	0.4506
Belgium	0.4466	0.4569	0.4516
Bulgaria	0.6306	0.6309	0.5689
Bolivia	0.6936	0.6798	0.5607
Brazil	0.5988	0.5824	0.6127
Canada	0.4835	0.4772	0.4829
Chile	0.7685	0.7752	0.7672
China	0.5395	0.5201	0.4890
Colombia	0.6819	0.6554	0.6777
Cyprus	0.6045	0.5729	0.5787
Czech Republic	0.5260	0.5242	0.4954
Germany	0.3154	0.3379	0.3610
Denmark	0.5076	0.4977	0.4787
Ecuador	0.6549	0.6983	0.7020
Spain	0.4460	0.4530	0.4563
Estonia	0.6392	0.5446	0.5268
European Union	0.2859	0.3028	0.3195
Finland	0.6368	0.6058	0.5726
France	0.3596	0.3944	0.4242
United Kingdom	0.3213	0.3315	0.3532
Greece	0.6542	0.6103	0.5830
Hong Kong, China	0.5383	0.5579	0.5677
Hungary	0.4685	0.5135	0.4913
India		0.6552	0.6255
Ireland	0.6736	0.7002	0.6920
Italy	0.4427	0.4408	0.4418
Japan	0.4420	0.4806	0.4777
Cambodia		0.6383	0.6298
Korea, Rep.	0.5177	0.5216	0.5157
Lithuania	0.6425	0.6085	0.5516

Luxembourg	0.6749	0.6678	0.6913
Latvia	0.7193	0.6145	0.5600
Mexico	0.5011	0.5028	0.5109
Malta	0.6532	0.6550	0.6542
Malaysia	0.5913	0.5515	0.5491
Netherlands	0.3797	0.4020	0.4026
Peru	0.7578	0.7714	0.7475
Poland	0.5509	0.5603	0.5316
Portugal	0.5945	0.5184	0.5586
Paraguay		0.6701	0.6672
Romania	0.6538	0.5972	0.5531
Singapore	0.5596	0.5576	0.5422
Slovak Republic	0.6102	0.5164	0.5491
Slovenia	0.6233	0.6195	0.5493
Sweden	0.4832	0.4817	0.4657
Thailand	0.5588	0.5429	0.5359
Uruguay	0.6662	0.6765	
United States	0.3348	0.3471	0.3098
Venezuela			0.7114
Vietnam		0.6737	

**Source:** Author's work in WITS

The table XXI below shows the Herfindahl-Hirschman Index (HH) of Trade Concentration. A country with a perfectly diversified export portfolio will have an index close to zero, whereas a country which exports only one export will have a value of 1 (least diversified). The HH index of Ecuador shows that Ecuador's economy has become less diversified in 2010 from what it was in 2002. In general Latin American countries need to focus on diversifying their production and trade structure.

**Table XXI:** HH Index for Some Selected Countries based on trade data at 2 Digit Level

Country	2002	2005	2010
Argentina	0.0670	0.0645	0.0601
Austria	0.0712	0.0730	0.0641
Belgium	0.0577	0.0574	0.0539
Bulgaria	0.0407	0.0476	0.0486
Bolivia	0.1308	0.2583	0.2668
Brazil	0.0368	0.0444	0.0598
Canada	0.0811	0.0892	0.0881

Chile	0.1111	0.1640	0.2204
China	0.0793	0.1011	0.1093
Colombia	0.1463	0.1707	0.3316
Cyprus	0.0809	0.1097	0.0701
Czech Republic	0.0930	0.0961	0.1027
Germany	0.0896	0.0887	0.0736
Denmark	0.0514	0.0532	0.0443
Ecuador	0.2217	0.3746	0.3288
Spain	0.0725	0.0687	0.0537
Estonia	0.0666	0.0829	0.0680
Finland	0.1162	0.1104	0.0732
France	0.0605	0.0585	0.0506
United Kingdom	0.0811	0.0763	0.0649
Greece	0.0401	0.0376	0.0380
Hong Kong, China	0.1198	0.1661	0.2336
Hungary	0.1370	0.1448	0.1391
India		0.0553	0.0663
Ireland	0.1366	0.1221	0.1399
Italy	0.0630	0.0658	0.0609
Japan	0.1451	0.1354	0.1139
Cambodia		0.5181	0.3812
Korea, Rep.	0.1255	0.1312	0.1095
Lithuania	0.0679	0.0954	0.0777
Luxembourg	0.0851	0.0759	0.0676
Latvia	0.1302	0.0867	0.0620
Mexico	0.1339	0.1265	0.1296
Malta	0.2948	0.2748	0.3192
Malaysia	0.2045	0.1766	0.1381
Netherlands	0.0398	0.0570	0.0484
Peru	0.1063	0.1256	0.1593
Poland	0.0540	0.0595	0.0649
Portugal	0.0585	0.0500	0.0429
Paraguay		0.1789	0.2024
Romania	0.0728	0.0646	0.0725
Singapore	0.2159	0.2011	0.1681
Slovak Republic	0.0770	0.0846	0.1213
Slovenia	0.0637	0.0692	0.0690
Sweden	0.0776	0.0824	0.0663

Thailand	0.0861	0.0848	0.0788
Uruguay	0.0680	0.0844	
United States	0.0817	0.0765	0.0558
Venezuela			0.8729
Vietnam		0.1021	

Source: Author's work in WITS

The Table XXII confirms the results of the earlier mentioned two tables. In 2010, more than 55% of Ecuador's total exports are of Industrial Code 27 (Mineral fuels, oils & product of their distilleries), followed by industrial code, 08 (Edible fruit and nuts) covering more than 12% of Ecuadorian exports, followed by 03 (Fish & crustacean, mollusc & other aquatic invertebrates (covering more than 6% of Ecuador's exports), followed by Industrial code 06 (Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage) covering 3.49%, Preparations of meat, of fish or of crustaceans, mollusks or other aquatic invertebrates (chapter 16) covering 3.42 %, Cocoa and cocoa preparations (chapter 18) covering 2.41 %, Preparations of vegetables, fruit, nuts or other parts of plants (chapter 20) covering 1.38% in 2010, among others. The trade concentration of Industrial code 27 has increased from more than 40% in 2002 to more than 55% in 2010. The share of industrial code 03 has come down marginally in 2010 from what it were in 2002. The share of industrial code 08 (Edible fruits and nuts) has come down from more than 20% in 2002 to more than 12% in 2010. The share of industrial code 06 has come down from more than 5% in 2002 to less than 3.50% in 2010. These trend may also indicate the importance of petroleum oil and other services industry (Travel and Tourism, Information Technology, Infrastructure services, among others) in production and trade structure of Ecuador.

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**Table XXII:** Product Concentration of 20 Products in Ecuador's Total Exports in 2002, 2005 and 2010

Year	Ind.	PC	Year	Ind.	PC	Year	Ind.	PC
2002	03	6.9212	2005	03	5.4216	2010	03	6.2553
2002	06	5.8049	2005	06	3.7716	2010	06	3.4949
2002	07	0.7651	2005	07	0.6279	2010	07	0.5066
2002	08	20.0022	2005	08	11.6099	2010	08	12.1166
2002	09	0.2866	2005	09	0.2777	2010	09	0.3932
2002	14	0.0052	2005	14	0.0043	2010	14	0.0110
2002	15	0.5994	2005	15	0.7872	2010	15	1.1744
2002	16	6.8185	2005	16	4.4721	2010	16	3.4523
2002	17	0.6801	2005	17	0.5429	2010	17	0.3159
2002	18	2.5506	2005	18	1.7180	2010	18	2.4197
2002	20	1.5256	2005	20	1.2766	2010	20	1.3855
2002	21	0.7487	2005	21	0.7016	2010	21	0.6458
2002	23	0.3411	2005	23	0.2660	2010	23	0.7253
2002	24	0.2965	2005	24	0.2531	2010	24	0.2277
2002	27	40.8806	2005	27	59.4707	2010	27	55.3032
2002	44	1.2919	2005	44	0.9758	2010	44	1.1758
2002	53	0.1589	2005	53	0.0788	2010	53	0.0752
2002	58	0.0030	2005	58	0.0043	2010	58	0.0599
2002	65	0.0633	2005	65	0.0421	2010	65	0.0584
2002	78	0.0053	2005	78	0.0330	2010	78	0.0500

**Source:** author's work in WITS

### Conclusions from Trade Indices Work

Ecuador need to rethink its trade policy by diversifying its trade into manufactured products and more diversified production structure. Information Technology services, Tourism, Manufacturing of Automobiles, Education and Training Services, Bio combustibles, Housing materials, Pharmaceutical industries, Health Products and Hospital services, Hardware production, Industrial and Textile Goods, Industrial and Textile Goods and Chemicals are some areas where Ecuador can think of developing niche and cater to European markets. Production and Trade in Climate Smart Goods is another area of focus. In particular, study identifies the following industries for further diversifying industrial structure of Ecuador for its gain in future. These are Industrial Codes- 61(Articles of apparel and clothing accessories, knitted or crocheted), 62(Articles of apparel and clothing accessories, not knitted or crocheted),42( Articles of leather; saddlery and harness; travel goods, handbags and similar containers; articles of animal), 90(Optical, photographic, cinematographic, measuring, checking,

precision, medical or surgical instruments and apparatus; parts and accessories thereof), 84(Electronic appliances), 85(Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles),87 (Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof), 83 (Miscellaneous articles of base metal), 73 (Articles of iron or Steel), 69 (Ceramic products), 30 (Pharmaceutical products),29(Organic chemicals), Climate Smart Goods- 840510(Clean Coal Technologies), 850720,853710 and 854140(Solar Photovoltaic systems), 848340 and 848360( Wind Power Technologies), 853931(Energy Efficient Lighting), among others. In services sector, Tourism, IT and ITES, Hospital services, Education and Training Services( training of English), Cultural Services, Knowledge Processing Outsourcing and Financial Analytics, Infrastructure services, have lot of potential of bring the necessary foreign exchange and stability into the system .Ecuador need to diversify into the following industries and services for higher and more stable export earnings, job creation and learning effects, and the development of new skills and infrastructure that would facilitate the development of even newer export products.



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