Centre on Regulation and Competition

WORKING PAPER SERIES

Paper No. 76

TRADE BARRIERS IN A GLOBAL PERSPECTIVE

Selim Raihan
University of Manchester

June 2004

ISBN: **1-904056-75-X**

Further details: Centre Secretary
Published by: Centre on Regulation and Competition,
Institute for Development Policy and Management, University of Manchester,
Harold Hankins Building, Precinct Centre, Oxford Road, Manchester M13 9QH, UK
Tel: +44-161 275 2798 Fax: +44-161 275 0808
Email: crc@man.ac.uk Web: http://idpm.man.ac.uk/crc/

Trade Barriers in a Global Perspective

Abstract*

This article develops an index of trade barrier for 119 countries by using the tariff and the import data from TRAINS database of UNCTAD at 6-digit level of HS classifications. Bi-variate as well as multivariate econometric models have been estimated to explain cross-country variations in the constructed trade barrier indices. The results show that cross-country variations in trade barrier indices are much influenced by variations in per capita income, population and literacy rate. This article considers Bangladesh as an example and finds that at disaggregated levels of commodity classification, there are significant differences among trade barrier indices across commodities and cross-country rankings of trade barrier indices are not necessarily consistent with the rankings of trade barrier indices in the cross-industry context.

INTRODUCTION

How is 'openness' of an economy defined? The answer to this question is not straight forward, as there are many ways of defining openness of an economy. The criterion openness also possesses both country-specific and cross-country contexts. It means, a country's openness should be viewed as an over time change in the trade regime in that country as well as the country's relative position of the trade regime in a cross-country context. There are basically three types of indicators of openness of an economy. The first type of indicators are outcome variables, such as the export-GDP ratio and the trade-GDP ratio. The second type of indicators are based on policy variables, such as tariffs and non-tariff barriers to trade. Finally, the third type of indicators are indirect measures, such as non-trade variables or subjective consideration of a country's trade regime (for a list of openness indicators see appendix 1). There are considerable debates about choosing which indicator is best in explaining openness in both cross-country and country-specific contexts. Though an outcome variable such as the trade-GDP ratio gives a good understanding of changes in the overall trade regime in a country specific context, its use as a measure of openness in the cross-country context has been criticised. This is because the cross-country variation in the trade-GDP ratio may not be associated with differences in trade regimes. As Rodriguez and Rodrik (1999) have argued, cross-country variations in the trade-GDP ratio may be influenced more by some structural factors such as geographical locations rather than differences in trade barriers. On the other hand, the third type of indicators have also been subjected to criticisms because they rely more on non-trade variables such as the exchange rate and the black market premium and also for their subjectivity. The second type of indicators have been preferred in many studies; however, the data on such policy variable as tariffs and non-tariff barriers for

cross-country comparisons, in a reasonably workable form are not readily available. Moreover, these indicators also have some limitations. For example, the simple average tariff may understate the extent of tariff dispersions in many of the economies. The import-weighted tariff has been considered better than the simple average tariff. However, the import-weighted tariff also may understate the extent of tariff protection of an economy, as the import-weighted tariff does not capture the particular tariff figure for a commodity for which import is zero. Moreover, usually construction of the import-weighted tariff is done at the relatively aggregated level, which may fail taking into account the variations in tariffs and import weights at more disaggregated levels. On the other hand, data on non-tariff barriers to trade are blurred for most of the countries and, in fact, it becomes a difficult task while attempts are made for mathematical conversion of those figures with a view to accomplish a cross-country comparison.

In this backdrop, the present paper is an attempt to construct an index of trade barriers for a number of countries by using both the tariff and the import data. The advantages of this index are two-fold: Firstly, it takes into account tariffs and imports data at reasonably disaggregated levels. Secondly, it takes into account import-weights at every corresponding tariff lines. One of the main contributions of this paper has been to infer about the relative openness of the country taking into consideration of the 'structural' characteristics. Structural characteristics refer to a country's physical characteristics on which a country usually has no control (see Amsden, 2000; Razzaque, 2002).

FORMULATION OF AN INDEX OF TRADE BARRIER

The indices of trade barriers have been constructed by using a Trade Barrier database, which is compiled and organized by the author (the database can be accessed by writing to the author). The database gives a snapshot of the status of tariff barriers for 119 developing and developed countries. The reference year for most of these countries is 2000-2001 (see appendix 2 for the reference years for these countries). The sectoral disaggregation in the database follows the Harmonised System (HS) and is complied at 2-digit level for 95 industries (see appendix 3 for the list of industries under the 2-digit HS code classification). The sources of the tariff and the import data are the internet version of the Trade Analysis & Information System (TRAINS) of the UNCTAD at the 6-digit level of HS classifications. The database contains three separate datasets. The first set is the simple average tariff at 2-digit level of the HS classification. The second one is about the import-weighted tariff at 2-digit

level of the HS classifications. Finally, the last set of dataset provides indices of trade barriers at the 2-digit level of the HS classifications.

We argue that the aforementioned database is a comprehensive one, which is helpful in the cross-country and the cross industry comparison of tariff barriers at the 2-digit level of the HS classifications. The database shows that there are significant variations in the trade protection both across countries and industries. The compiled database shows the significant differences in the ranking of countries at the 2-digit level using the three different indicators of tariff protection: the simple average tariff, the import-weighted tariff and the index of trade barriers.

We also calculate the aggregate Trade Barrier Index for 119 countries by using data at the 6-digit HS code level. The formula used to construct this index is as follows[1]:

$$TRB_j = \frac{1}{n}[\sum(1+\frac{M_{ij}}{Mj})\ln(1+T_{ij})]\times 100 \qquad (1)$$

where, TRB_j is the Trade Barrier Index of the jth country, M_j is the value of the total import in thousand US$ of the jth country, M_{ij} is the value of the import in thousand US$ of the ith commodity in the jth country, T_{ij} is the tariff rate for the ith commodity in the jth country, n is the number of commodities (which is 5545 under the 6-digit HS code classification) and *ln* is the natural logarithm. It is important to note here that this Trade Barrier Index captures the import-weight ($\frac{M_{ij}}{M_j}$) in the formula. Thus, it is a modified form of import-weighted tariff, though it posses an advantage over import-weighted tariff. The commodities for which the import is zero, the import-weight will naturally be also zero. Thus, import-weighted tariff ignores the tariff rates for those commodities for which import values are zero. On the other hand, the constructed trade barrier index captures the tariff rates for all zero-valued imports. Suppose, in equation (1), if for any ith commodity, $T_{ij}>0$ and $M_{ij}=0$, then $\frac{M_{ij}}{M_j}=0$, but the term $(1+\frac{M_{ij}}{Mj})\ln(1+T_{ij})$ will not be equal to zero rather will

take into account the full T_{ij} value. The term $(1+\frac{M_{ij}}{Mj})\ln(1+T_{ij})$ will only be equal to zero when $T_{ij} = 0$.

In order to calculate the trade barrier indices at relatively disaggregated levela (at the 2-digit HS code level) equation (1) has been modified to equation (2):

$$TRB_j^{hs} = \frac{1}{n}[\sum(1+\frac{M_{ij}^{hs}}{Mj^{hs}})\ln(1+T_{ij}^{hs})]\times 100 \qquad (2)$$

where, hs is the HS code at 2-digit level and it varies from 01 to 96. Thus, TRB_j^{hs} is the trade barrier index of commodities at any hs code in the jth country, M_{ij}^{hs} is the value of the import in thousand US$ of the ith commodity within that hs code in the jth country, Mj^{hs} is the total value of the import in thousand US$ at that hs code in the jth country, T_{ij}^{hs} is the tariff rate for the ith commodity within that hs code in the jth country, n is the number of commodities within that particular hs code, and finally *ln* is the natural logarithm.

It is worth noting here that we have divided equation (2) by n, the number of commodities under the particular HS code, because of bringing conformity in the comparison of trade barrier indices across HS commodity groups at the 2-digit levels, as the number of commodities varies across 2-digit HS code levels. However, dividing the formula of trade barrier index by *n* does not change the relative magnitude of the trade barriers for the commodities for the countries under consideration, because *n* is the same for all countries for any particular HS code. Thus, though equation (1) could be written without dividing by n (and, in fact, it was sufficient for a cross-country comparison at the aggregate level) we divided it by n because we opted for following a standard formulation in both equation (1) and (2).

The trade barrier indices as proposed in equations (1) and (2) suggest that the higher the value of the index the higher is the trade barrier. Table 1 presents the calculated aggregate trade barrier indices for 119 countries on the basis of equation (1). This table also shows the relative ranking of these countries: with high values indicating relatively closed economies.

Table 1: Aggregate Trade Barrier Indices and Ranking for 119 Countries

Countries	Aggregate TRB Index	Rank	Countries	Aggregate TRB index	Rank
Albania	9.11	63	Korea	7.91	75
Algeria	17.81	7	Lao PDR	8.01	74
Antigua	8.15	72	Latvia	2.95	113
Armenia	2.59	114	Lebanon	5.04	99
Australia	3.59	109	Libya	14.12	26
Bahamas	0.47	118	Lithuania	2.97	112
Bahrain	6.61	87	Madagascar	5.87	96
Bangladesh	17.48	8	Malawi	11.01	40
Barbados	9.89	56	Malaysia	7.57	79
Belarus	10.65	42	Maldives	16.69	9
Belize	8.80	66	Mali	10.24	50
Bemuda	10.24	46	Malta	6.38	90
Benin	14.58	25	Mauritania	9.28	59
Bhutan	12.72	31	Mauritius	21.15	5
Bolivia	8.53	68	Mexico	14.64	24
Bosnia and Herz	5.31	98	Moldova	4.31	102
Brunei	1.83	117	Morocco	23.43	3
Bulgeria	10.43	45	Mozambique	11.4	39
Burkina Faso	10.24	47	New Zealand	2.30	115
Cameroon	14.95	16	Nicaragua	4.11	105
Canada	3.85	107	Niger	10.24	51
Central African Rep	14.95	17	Norway	2.1	116
Chad	14.95	18	Oman	4.23	104
Chile	7.08	83	Pakistan	16.56	11
China	6.72	84	Panama	6.70	86
China (Taiwan)	13.16	29	Papua New Guinea	15.53	14
Colombia	10.47	44	Paraguay	10.91	41
Congo Rep.	14.95	19	Peru	11.76	36
Costa Rica	4.75	101	Philippines	6.29	92
Cote d'Ivoire	10.24	48	Poland	10.16	55
Croatia	9.07	65	Romania	13.99	27
Cuba	9.13	61	Russia	9.71	57
Czech Rep	4.87	100	Rwanda	8.44	69
Dominica	8.13	73	Saudi Arabia	10.22	54
Dominican Rep	14.65	23	Senegal	10.24	52
Ecuador	11.74	37	Seychelles	20.88	6
Egypt	16.59	10	Slovenia	8.31	71
El Salvador	6.10	93	Solomon Islands	24.73	2
Equational Guinea	14.95	20	South Africa	6.72	85
Estonia	0.06	119	Sri Lanka	7.88	76
Ethiopia	15.33	15	St. Kitts Nevis	7.78	78
EU	3.91	106	St. Lucia	7.37	80
Formar Yug Macedonia	11.94	34	St. Vincent & Grenadines	8.33	70
Gabon	14.95	21	Sudan	4.24	103
Georgia	9.22	60	Thailand	14.92	22
Ghana	12.01	33	Togo	10.24	53
Guatemala	5.78	97	Trinidad & Tobago	6.46	88
Guinea-Bissau	10.24	49	Tunisia	23.15	4
Guyana	9.13	62	Turkey	8.61	67
Honduras	5.94	94	U. Rep. Of Tanzania	13.65	28
Hungary	9.37	58	Uganda	7.85	77
Iceland	2.99	111	Ukrainian	7.34	81
India	25.42	1	Uruguay	11.74	38
Indonesia	7.13	82	USA	3.35	110
Iran	6.36	91	Uzbekistan	9.10	64
Israel	6.40	89	Venezuela	10.63	43
Jamaica	5.93	95	Vietnam	12.93	30
Japan	3.84	108	Zambia	11.9	35
Jordan	12.27	32	Zimbabwe	15.62	12
Kenya	15.57	13			

Note: Ranking is done from higher to lower values of trade barrier indices.

In Table 1 Estonia appears to be the most open economy while India being the most closed economy.

Before going into the next exercises two caveats must be kept in mind. Firstly, the constructed trade barrier index does not take into account the importance of non-tariff barriers. As revealed in many studies, non-tariff barriers could be significant barriers to trade in many of the developing and the developed countries. Secondly, this index is just a snapshot of the trade barrier status of the countries mostly during 2000-2001. Therefore, this index does not capture the over time evolution of trade restrictiveness in the sample countries.

Despite the above shortcomings, the constructed index can be used as a useful indicator while doing the cross-country and the cross-commodity comparisons of trade barriers at a particular point in time. Moreover, the ranking of countries on the basis of the index is consistent with the standard classification of countries whether they are open or closed.

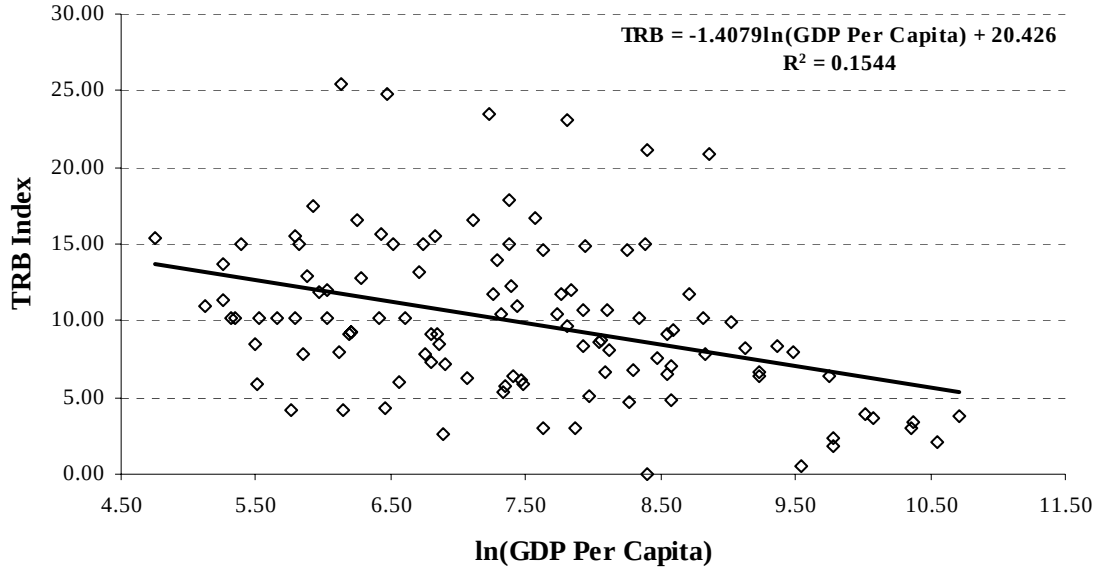
FACTORS DETERMINING TRADE BARRIERS

What are the factors that can explain the cross-country variations in trade barriers? 'Why are some countries more protectionist than others'?[2] We have identified a list of possible structural factors determining a country's being open or close. We first see the pair-wise relationships between the indices of trade barriers and these factors, and then we build a multi-variate econometric model to examine the relationships.

Per Capita GDP and Trade Barriers

Does the cross-country variation in per capita GDP explain the cross-country variation in trade barriers? A priori, it might be hypothesised that the countries with higher per capita GDP might have lower trade barriers. Figure 1 shows the relationship between per capita GDP and the trade barrier indices for 101 countries. The GDP per capita is measured in constant 1995 US$ and expressed in natural logarithm.

Figure 1: Trade Barriers and ln(GDP Per capita)



Note and source: GDP per capita is measured in constant 1995 US dollars and data is for the year 2000. In case when the data for 2000 is not available the data for 1999 or 1998 are used. The data are from World Development Indicators CD-ROM 2002 (World Bank, 2002). TRB indices are from table 1.

Figure 1 suggests that there is a strong negative relationship between per capita GDP and trade barrier indices in a cross-country context. The estimated R^2 shows that per capita GDP alone can explain 15 per cent of the variations in the cross-country trade barriers. It appears from figure 1 that as countries become more and more developed, as measured by per capita GDP, they become more open, as measured by the lower trade barrier index. In fact, the average values for trade barrier indices for the low, middle and high income countries in our sample are 11.25, 10.29 and 4.03 respectively.

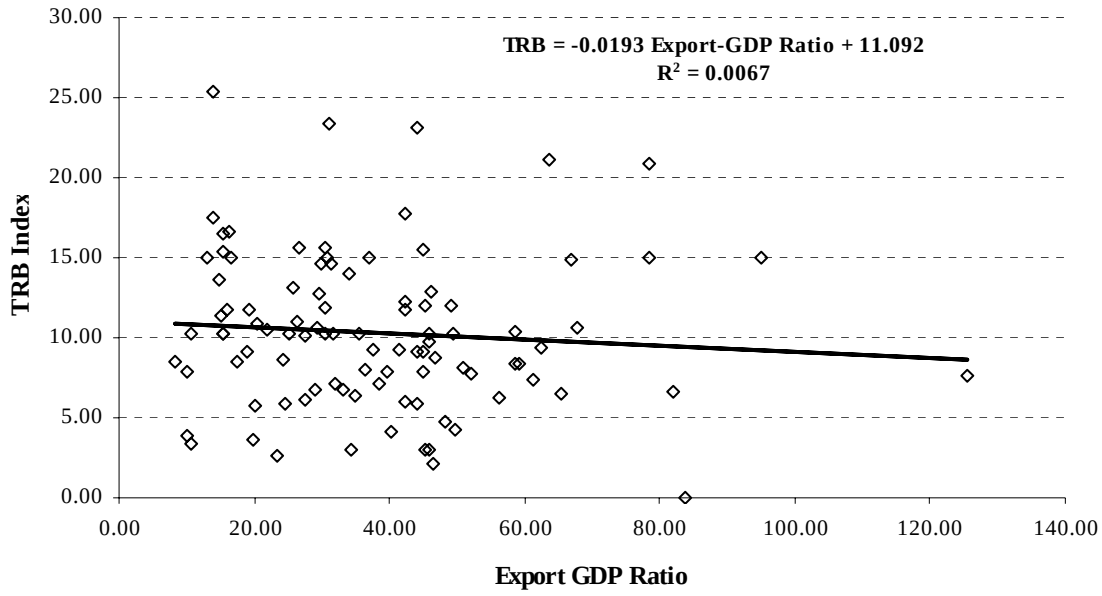
The reason behind such relationship could be because of the fact that as countries become more developed they tend to be more integrated into the global market. Domestic producers become more efficient in competing with their foreign counterparts in the world market. There is a related debate whether economic growth could be achieved by being more open or openness is a by-product of high economic growth. Studies, such as Sachs and Warner (1995), Edwards (1998) and Dollar and Kraay (2001) suggest that openness has a positive influence over economic growth, though many of the findings of these studies have been criticised on grounds of weak methodology, and the studies, such as Harrison and Hanson (1999) and Rodriguez and Rodrik (1999) suggest that such a direct relationship is not profound in a cross-country framework.

Export-Orientation and Trade Barriers

Are more export-oriented countries, as measured by relatively high export-GDP ratios, more open compared to those who are not? It has become a common practice in many studies to treat export orientation as an openness indicator of the economy. Some, however, have argued that the export-orientation may not be associated with trade barriers of the economy.[3]

Given this backdrop, here we have attempted to find out the correlation between export-orientation and trade barriers in a cross-country framework for a number of 97 countries. Figure 2 portrays this relationship.

Figure 2: Export-GDP Ratio and Trade Barriers



Note and source: Export-GDP ratio data are for the year 2000. In case when the data for 2000 is not available the data for 1999 or 1998 are used. The data are from World Development Indicators CD-ROM 2002 (World Bank, 2002). TRB indices are from table 1.

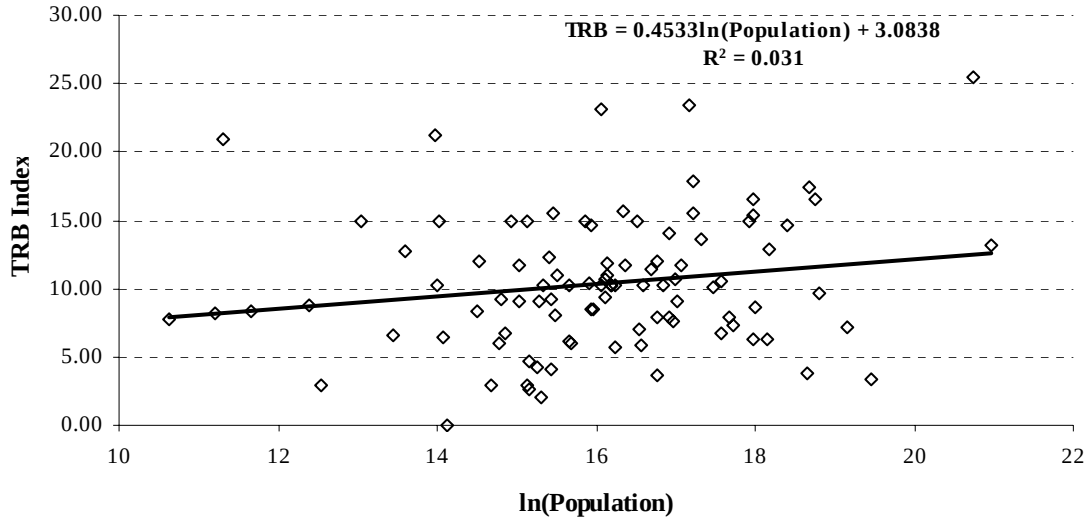
Figure 2 suggests that though the coefficient on the export-GDP ratio is negative indicating an inverse relationship between the export-orientation and the trade barrier indices, the relationship is extremely weak because of the extremely low R^2 value of 0.006. It actually suggests that there is virtually no association between these two variables.

Population and Trade Barriers

Are countries having bigger domestic markets likely to be more protectionist than the others who are not? The reason behind such an argument is that large domestic market may

encourage more domestic production thus substituting imports. Amsden (2000), Gylfason (1999) and Razzaque (2002) have used the size of population as an indicator of the size of domestic market and their findings suggest that bigger countries might be expected to be more protectionist than the smaller ones. However, in all these three studies the authors used export-GDP ratio as an indicator of openness. Figure 3 shows the relationship between population and trade barriers for 97 countries. Population in figure 3 is expressed in natural logarithm.

Figure 3: Population and Trade Barriers



Note and source: Population data are for the year 2000. In case when the data for 2000 is not available the data for 1999 or 1998 are used. The data are from World Development Indicators CD-ROM 2002 (World Bank, 2002). TRB indices are from table 1.

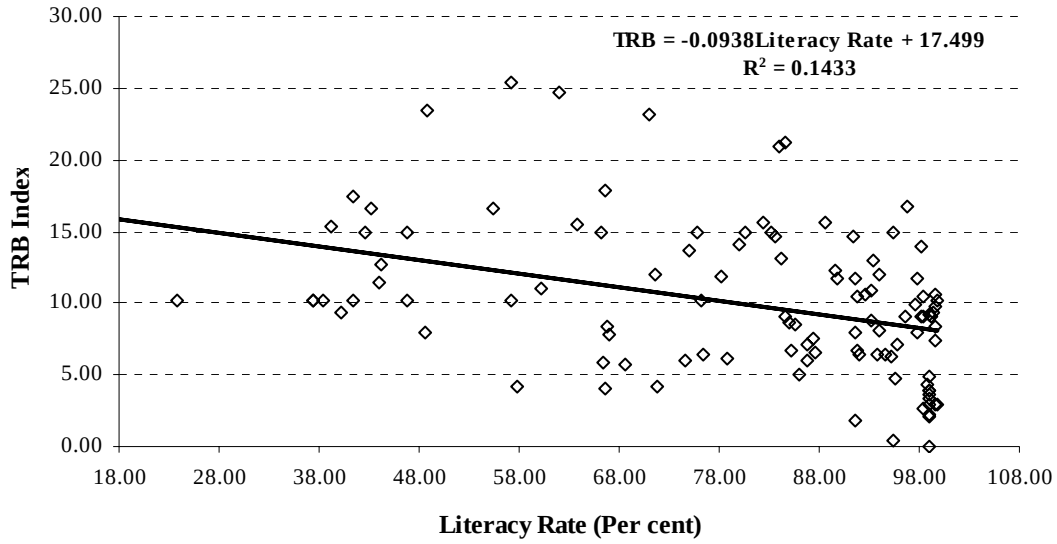
Figure 3 shows a very weak (R^2 = 0.03) but positive relationship between population and trade barriers, suggesting that the countries with large population tend to have higher trade barriers.

Human Capital and Trade Barriers

Do the countries with higher human capital tend to be less protectionist? It would be interesting to explore whether cross-country variations in human capital have any influence over cross-country variations in trade barriers. Mayda and Rodrik (2001) find that education possesses strong impacts on the cross-country variations in perception on trade barriers and the relationship between these to variables is negative. Though in the study by Mayda and Rodrik (2001) the average year of education has been used as an indicator of human capital,

our study considers literacy rate as a proxy for human capital. Figure 4 plots the relationship between literacy rate and trade barrier indices for 111 countries.

Figure 4: Literacy Rate and Trade Barriers



Note and source: The data for literacy rate are for the year 2000. In case when the data for 2000 is not available the data for 1999 or 1998 are used. The data are from World Development Indicators CD-ROM 2002 (World Bank, 2002). TRB indices are from table 1.

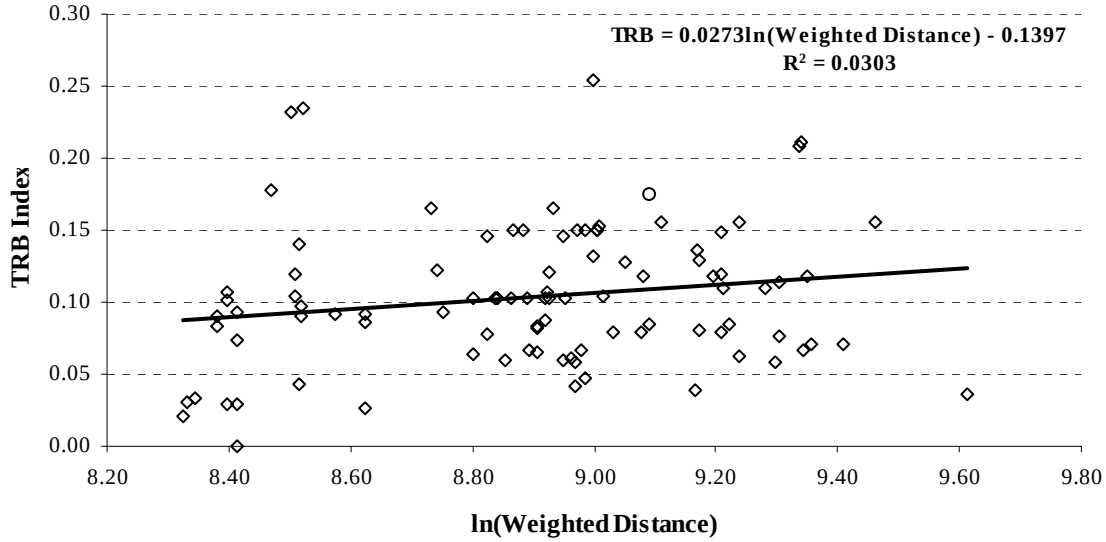
It is evident from figure 4 that there is a strong negative relationship between literacy rates and trade barriers in a cross-country framework. In fact, the figure confirms that more than 14 per cent of the variations in cross-country trade barriers can be explained by the variations in the literacy rates. The level of human capital is thus likely to have significant impacts on the perception of the people as well as on the policy making of the governments in integrating their economies with the world market. Because, it can be argued that as the level of human capital increases in a country it raises the levels of skills and productivities, which may have positive influence on the process of lowering the trade barriers thus increasing foreign competition in the economy.

Geographical Location and Trade Barriers

Does the geographical location of a country have any influence over its trade barrier? The literature on 'gravity models' of trade (Clarke and Tavares, 2000; Frankel and Romer, 1999 and Soloaga and Winters, 1997) argues that the distance between two trading countries affect their trade volume in a way that higher the distance lower is the trade volume. This literature of gravity models, however, does not say anything about the relationship with geographical

location when the trade barrier, not the trade volume, is concerned. We, in this study, have attempted to examine whether cross-country variations in geographical locations have any influence over cross-country variations in trade barriers. We have used the 'weighted-distance' as an indicator of the geographical location. The data on weighted-distance has been constructed by Razzaque (2002) by using the following procedure: Firstly, ten largest importing countries in the world were chosen and their weights were calculated based on 1997 imports. The countries with weights are the USA (0.29), Germany (0.15), Japan (0.11), France (0.09), the UK (0.09), Italy (0.06), Canada (0.055), Hong Kong (0.055), the Netherlands (0.05), and Belgium (0.04). Then weighted-distances were calculated for all countries from the biggest importers. The weighted-distance was defined as $D_{ij} = \sum_{j=1}^{10} w_j d_{ij}$ where, D is the weighted distance of country i from a set of $j = 1.....10$ importers, w is the weight assigned to the jth importer and d is the distance between a country i and the importer j.[4] Figure 5 shows the bi-variate relationship between the weighted-distance and trade barrier indices for 97 countries.

Figure 5: Weighted Distance and Trade Barrier



Note and source: The weighted-distance data are from Razzaque (2002). TRB indices are from table 1.

Figure 5 suggests that, though the fit is not at all impressive ($R^2 = 0.03$), there is, in fact, a positive association between the weighted-distance and the trade barrier index.

TRADE BARRIERS CONTROLLING FOR ALL THE STRUCTURAL FACTORS

A Multivariate Model of Cross-Country Trade Barriers

The bi-variate relationships between the structural factors and our trade barrier indices point us to the fact that the cross-country variations in our trade barrier indices are indeed influenced by these different structural factors, though the degree of influence varies from one factor to another. However, such bi-variate exercises are problematic and insufficient in explaining cross-country variations in trade barriers. There are problems of bias in bi-variate regressions because of omitted variable(s). Moreover, such bi-variate relationships consider relationship between two variables holding all other variables constant, when in the real world it may not be true. We, therefore, opt for a multivariate cross-country regression model for the trade barrier index, which tries to incorporate all the structural factors we have identified earlier. Following is a simple cross-country model for trade barrier index:

$$TRB = \beta_0 + \beta_1 PCY + \beta_2 XY + \beta_3 POP + \beta_4 LIT + \beta_5 D + \varepsilon \qquad (3)$$

where, TRB is the trade barrier index, PCY stands for the per capita GDP expressed in 1995 US$ in hundreds, XY is the export-GDP ratio (in per cent), POP is the population in thousands, LIT is the literacy rate (in per cent), D is the weighted-distance measured in 100 kilometres and ε is the classical error term. The full database is reported in appendix 4. The results of the cross-country regression are reported in table 2.[5]

Table 2: Results of the Cross-Country Regression

Explanatory Variables	Coefficient (Standard Error)	t-ratio
Constant	13.44***(1.94)	6.90
PCY	-0.02***(0.005)	-3.59
XY	-0.006 (0.02)	-0.33
POP	0.74E-5***(0.22E-5)	3.38
LIT	-0.05***(0.02)	-2.48
D	0.11 (0.15)	0.73
S.E of Regressions	3.49	
Adjusted R^2	0.48	
Functional Form [$\chi^2(1)$]	0.01	
Normality [$\chi^2(2)$]	1.76	
Heteroscedasticity [$\chi^2(1)$]	0.02	

Note: The regression is based on 97 countries. *** indicate statistical significance at 1 per cent level. For diagnostics Ramsey's (1969) RESET test for functional form, the Jarque-Bera test for normality of residuals and White's (1980) test for heterescedasticity are performed. The critical values for $\chi^2(1)$ and $\chi^2(2)$ at the 95 per cent levels are 3.84 and 5.99, which are being used to test the null hypothesis of no functional form problem, normality of regression residuals and homoscedastic errors. Four countries: Mauritius, Morocco, Seychelles and Tunisia appear to be the outliers in the cross-country regression model. Problem of outliers has been treated by adding a dummy variable for the outliers in the cross-country regression depicted in equation (3). The regression coefficient on the outlier dummy turned out to be statistically significant at the one per cent level.

According to the results of Table 2, in the cross-country regression of 97 countries, the per capita GDP, population and the literacy rate appear to be statistically significant at the one per cent level. Two other variables viz., the export-GDP ratio and the weighted-distance turn out to be statistically insignificant. The coefficients on per capita GDP, export-GDP ratio and literacy rate are negative as were found in the bi-variate relationships. On the other hand, the coefficient on weighted-distance is positive.

Table 2 also suggests that 48 per cent of the cross-country variations in trade barrier indices can be explained by our model depicted in equation (3). The diagnostics tests are also reported in table 2. It is evident that the functional form of the model is correct as the computed chi-square value (0.01) is lower than the critical chi-square value (3.84). The model also passes the normality test as the computed chi-square value (1.76) is lower than the critical chi-square value (5.99). Furthermore, the model does not suffer from heteroscedasticity problem as the computed chi-square value (0.02) is lower than the critical chi-square value (3.84).

Actual vs. Predicted Trade Barrier Index

On the basis of the regression results of the multivariate model depicted in (3) the differences (residuals) in the actual and the predicted trade barrier indices are calculated for all the 97 countries in our sample. We divide the sample in two groups: the countries with negative residuals and the countries with positive residuals and rank them from lower to higher values of residuals. It can be interpreted that the countries with the negative residuals refer to those economies for which the actual trade barrier indices are lower than the trade barrier indices predicted from the econometric model. This suggests that these countries are ‘over-open’ given their structural characteristics. On the other hand, the countries with the positive residuals refer to those countries for which the actual trade barrier indices are higher than the predicted trade barrier indices from the econometric model. This suggests that these countries are ‘over-closed’ given their structural characteristics. The results of this exercise are reported in table 4.

Table 4: Actual vs. Predicted Trade Barrier Index

Countries with Negative Residuals				Countries with Positive Residuals			
Countries	**Actual**	**Predicted**	**Residual**	**Countries**	**Actual**	**Predicted**	**Residual**
Estonia	0.06	7.7044	-7.6444	Uzbekistan	9.1	8.91	0.19003
Nicaragua	4.11	10.7409	-6.6309	Norway	2.1	1.8057	0.29431
Armenia	2.59	8.9071	-6.3171	Russia	9.71	9.4156	0.29444
China (Taiwan)	13.16	19.2319	-6.0719	Georgia	9.22	8.8799	0.34007
Madagascar	5.87	11.3155	-5.4455	Korea	7.91	7.2318	0.67824
Lithuania	2.97	8.3772	-5.4072	Bhutan	12.72	11.9531	0.76689
Latvia	2.95	8.2609	-5.3109	Colombia	10.47	9.601	0.86902
Guatemala	5.78	10.62	-4.84	Tunisia	23.15	22.1434	1.0066
Indonesia	7.13	11.6699	-4.5399	Saudi Arabia	10.22	9.0975	1.1225
Moldova	4.31	8.7075	-4.3975	Croatia	9.07	7.8737	1.1963
Honduras	5.94	10.2742	-4.3342	Paraguay	10.91	9.6581	1.2519
Iran	6.36	10.3691	-4.0091	Zambia	11.9	10.5248	1.3752
El Salvador	6.1	9.9895	-3.8895	Ghana	12.01	10.5123	1.4977
Costa Rica	4.75	8.624	-3.874	Japan	3.84	2.327	1.513
Lao PDR	8.01	11.8607	-3.8507	Venezuela	10.63	9.1051	1.5249
Philippines	6.29	9.882	-3.592	Hungary	9.37	7.7128	1.6572
Jamaica	5.93	9.3504	-3.4204	Slovenia	8.31	6.504	1.806
Uganda	7.85	11.1679	-3.3179	Poland	10.16	8.3501	1.8099
South Africa	6.72	9.9375	-3.2175	Bulgaria	10.43	8.5393	1.8907
Niger	10.24	13.3927	-3.1527	Peru	11.76	9.7822	1.9778
Burkina Faso	10.24	13.0249	-2.7849	Ecuador	11.74	9.4719	2.2681
Rwanda	8.44	11.1252	-2.6852	Belarus	10.65	8.1427	2.5073
Mauritania	9.28	11.836	-2.556	Ethiopia	15.33	12.8048	2.5252
Australia	3.59	5.9244	-2.3344	Tanzania	13.65	10.9512	2.6988
Panama	6.7	9.0117	-2.3117	Vietnam	12.93	10.1396	2.7904
Benin	10.24	12.3253	-2.0853	Chad	14.95	12.0749	2.8751
Sri Lanka	7.88	9.7802	-1.9002	Central Af. Rep	14.95	11.9328	3.0172
Chile	7.08	8.958	-1.878	Uruguay	11.74	8.7104	3.0296
Senegal	10.24	12.1166	-1.8766	Jordan	12.27	9.1838	3.0862
Guinea-Bissau	10.24	12.0927	-1.8527	Macedonia FYR	11.94	8.6138	3.3262
United States	3.35	5.1943	-1.8443	Pakistan	16.56	13.0033	3.5567
Mali	10.24	12.0701	-1.8301	Papua New Guinea	15.53	11.3356	4.1944
Trinidad	6.46	8.2899	-1.8299	Bangladesh	17.48	13.2297	4.2503
Bolivia	8.53	10.1478	-1.6178	Cameroon	14.95	10.3814	4.5686
Ukrainian	7.34	8.8258	-1.4858	Gabon	14.95	10.0692	4.8808
Cote d'Ivoire	10.24	11.6732	-1.4332	Mexico	14.64	9.6245	5.0155
Malaysia	7.57	8.8378	-1.2678	Egypt	16.59	11.5644	5.0256
Mozambique	11.4	12.5259	-1.1259	Dominican Rep	14.65	9.5747	5.0753
Turkey	8.61	9.6223	-1.0123	Romania	13.99	8.8334	5.1566
Togo	10.24	11.2439	-1.0039	Kenya	15.57	10.3927	5.1773
Bahrain	6.61	7.5331	-0.92309	Congo	14.95	9.733	5.217
St. Vincent	8.33	8.998	-0.66803	Thailand	14.92	9.3555	5.5645
Dominica	8.13	8.6876	-0.55758	Zimbabwe	15.62	10.0159	5.6041
Mauritius	21.15	21.6704	-0.52036	Equational Guinea	14.95	9.2187	5.7313
Albania	9.11	9.5981	-0.48806	India	25.42	18.8864	6.5336
Malawi	11.01	11.4925	-0.48252	Algeria	17.81	10.3406	7.4694
Morocco	23.43	23.6801	-0.2501				
Seychelles	20.88	21.1161	-0.23612				
Iceland	2.99	3.0751	-0.08507				
St. Kittis &Nevis	7.78	7.7913	-0.01127				
Belize	8.8	8.806	-0.00604				

Note: Countries are ranked from lower to higher values of the residuals.

Table 4 suggests that in our sample of 97 countries 51countries turn out to have negative residuals and the rest 46 countries are having positive residuals. It is found that Estonia is

having the highest negative residual. On the other hand, Algeria is having the highest positive residual.

TRADE BARRIERS AT A DISAGGREGATED LEVEL: THE CASE OF BANGLADESH AS AN EXAMPLE

Table 1 ranks Bangladesh 8th amongst 119 countries in terms of higher trade barrier index. But the ranking was based on an aggregated index and there is no denying the fact that such aggregation may not reveal the true picture of trade barriers at more disaggregated level. We, therefore, also computed the trade barrier indices for all 119 countries at 2-digit HS code levels by using the formula developed in equation (2). The results of this exercise have produced a dataset of trade barrier indices at 2-digit levels of the HS codes for 119 countries. Table 5 presents the relative position of Bangladesh in that dataset. In the second column of table 5 we present Bangladesh's trade barrier indices at the 2-digit HS code levels. The third column of the table indicates the relative rankings of Bangladesh's trade barrier indices for 2-digit HS codes in the cross-country context. This sort of exercise is helpful in identifying the sectors for which Bangladesh possesses relatively low/high trade controls vis-à-vis the cross-country experience.

The fourth column of the table 5 presents the relative rankings of Bangladesh's trade barrier indices for 95 industries under the 2-digit HS code levels in the cross-industry context.

Table 5: Bangladesh's Trade Barrier Indices at 2-digit HS Code Levels: Ranking in a Cross-Country and in a Cross- Industry Context

HS Code	TRB Index	Rank in a Cross-Country Context	Rank in a Cross-Industry Context	HS Code	TRB Index	Rank in a Cross-Country Context	Rank in a Cross-Industry Context
01	3.14	97	89	49	10.78	22	82
02	22.87	26	45	50	19.32	9	60
03	21.13	34	51	51	17.86	11	67
04	32.43	10	11	52	21.96	10	48
05	18.50	18	64	53	25.49	3	35
06	2.67	104	90	54	24.31	6	40
07	19.03	44	62	55	22.80	8	46
08	30.12	15	22	56	29.01	3	25
09	32.39	7	12	57	31.85	14	16
10	4.36	94	88	58	32.51	9	10
11	17.06	35	70	59	27.22	6	27
12	10.15	23	84	60	33.61	9	6
13	19.92	11	58	61	32.04	14	15
14	15.59	11	74	62	34.74	15	3
15	25.52	8	33	63	32.09	11	14
16	23.67	34	42	64	31.32	10	18
17	25.37	10	36	65	34.74	7	4

HS Code	TRB Index	Rank in a Cross-Country Context	Rank in a Cross-Industry Context	HS Code	TRB Index	Rank in a Cross-Country Context	Rank in a Cross-Industry Context
18	33.72	9	5	66	36.39	4	1
19	17.68	59	69	67	35.83	7	2
20	32.34	14	13	68	25.22	8	37
21	25.49	21	34	69	26.04	8	29
22	32.71	28	9	70	24.88	5	39
23	0.20	111	93	71	21.40	23	49
24	28.05	38	26	72	14.64	9	77
25	14.42	11	79	73	27.21	4	28
26	0.23	90	92	74	20.14	6	57
27	23.21	7	44	75	19.79	6	59
28	14.55	7	78	76	19.17	8	61
29	12.54	8	81	77	-	-	-
30	8.39	15	86	78	18.69	9	63
31	0.00	91	94	79	18.32	9	65
32	13.93	15	80	80	20.90	7	52
33	23.54	14	43	81	18.32	8	66
34	25.93	9	30	82	23.91	4	41
35	20.72	10	55	83	29.89	4	23
36	33.12	6	7	84	9.48	26	85
37	20.29	14	56	85	16.70	16	72
38	21.18	5	50	86	17.86	6	68
39	21.97	8	47	87	14.83	39	76
40	20.86	10	53	88	6.61	39	87
41	0.59	103	91	89	15.17	13	75
42	31.42	9	17	90	10.65	30	83
43	30.44	9	20	91	16.66	52	73
44	17.03	28	71	92	32.82	6	8
45	20.83	9	54	93	25.80	30	31
46	30.80	12	19	94	30.39	9	21
47	0.00	87	95	95	24.99	16	38
48	25.76	5	32	96	29.39	6	24

Note: Ranking is done from higher to lower trade barrier indices.

In order to have a clear understanding of the content of table 5 we may define the rankings in the following way: in the cross-country context the rankings above 80 can be viewed as largely liberal trade restrictions, the rankings between 60 and 79 as moderately-low levels of restrictions, the rankings between 40 and 59 as moderately-high restrictiveness and finally, the rankings lower than 40 as highly controlled trade regimes. Keeping in mind the aforementioned classifications, it is evident from table 5 that in the cross-country context Bangladesh possesses liberal trade policy for only 8 industries (8.4 per cent of total 95 industries), moderate-high trade barrier indices for 3 industries (3.15 per cent of total 95 industries) and high trade barrier indices for the rest 84 industries (88.4 per cent of the total 95 industries). Bangladesh has the most liberal trade restriction for HS 47 (pulp of wood, waste & scrap of paper) and HS 31 (fertilisers) and the most restrictive one for HS 66 (umbrellas, sun umbrellas, walking-sticks, whips, riding-crops & parts).

One interesting point to note from table 5 is that the cross-country rankings of trade barrier indices are not necessarily consistent with the rankings of trade barrier indices in the cross-industry context. It suggests that although in the cross-industry context, trade barrier index for a particular commodity group may be quite low, but it may not be so in the cross-country framework. Suppose, for the HS code 30 Bangladesh is having a lower trade barrier index (8.39) in the context of a cross-industry ranking (its rank is 86 out of 95 industries), however, in the cross-country context that trade barrier index turns out to be high, because its rank is 15 out of 119 countries.

CONCLUSION

While mentioning the limitations of different indicators of openness this article develops indices of trade barriers for 119 countries by using the tariff and the import data at 6-digit HS code levels. The countries are ranked on the basis of the aggregate trade barrier indices and it is found that India is the closest economy and Estonia is the most open economy in our sample of 119 countries.

This article also estimates the bi-variate as well as the multivariate econometric models to explain the cross-country variations in the constructed trade barrier indices. The results show that the cross-country variations in the trade barrier indices are much influenced by variations in the per capita incomes, population and the literacy rates.

We have also shown that there are marked differences among trade barrier indices for a country while considering commodities at disaggregated levels. We considered Bangladesh as an example and have found that the cross-country rankings of trade barrier indices are not necessarily consistent with the rankings of trade barrier indices in the cross-industry context.

Notes

* The author is a PhD candidate, IDPM, University of Manchester, UK, and research assistant in the CRC.
E-mail: selim.raihan@stud.man.ac.uk, sraihan72@yahoo.co.uk

[1] This formula is to some extent similar to the one used in Fischer (1993). However, Fischer used $(\frac{X+M}{2} \cdot GDP)\ln(1+tar)$ where X and M are the exports and imports and tar is the tariff rate.

[2] From the title of Mayda and Rodrik (2001).

[3] See Rodrik (1999), Rodriquez and Rodrik (1999)

[4] In constructing the 'weighted distance' Razzaque (2002) collected distance data from the website: http://www.eiit.org/Trade.Resources/TradeData#Gravity.

[5] We also ran the regression model depicted in equation (3) in a log-linear form. However, the log-linear model suffers from sever normality problem. We, therefore, run the model in levels.

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Appendix 1

Measures of Openness

Measure	Definition
Trade dependency ratio	The ratio of exports and imports to GDP
Growth rate of exports	The growth rate of exports over the specified period
Tariff averages	A simple or trade-weighted average of tariff levels
Collected tariff ratios	The ratio of tariff revenues to imports
Coverage of quantitative restrictions	The percentage of goods covered by quantitative restrictions
Black market premium	The black market premium for foreign exchange, a proxy for the overall degree of external sector distortions
Heritage Foundation index	An index of trade policy that classifies countries into five categories according to the level of tariffs and other (perceived) distortions
IMF index of trade restrictiveness	A composite index of restrictions on a scale of 0 to 10
Trade bias index	The extent to which policy increases the ratio of importable goods' prices relative to exportable goods' prices compared to the same ratio in world markets.
The World Bank's outward orientation index	An index that classifies countries into four categories depending on their perceived degree of openness
Sachs and Warner index	A composite index that uses several trade-related indicators: tariffs, quota coverage, black market premia, social organization and the existence of export marketing boards
Leamer's openness index	An index that estimates the difference between the actual trade flows and those that would be expected from a theoretical trade model

Source: Winters *et al* (2002)

Appendix 2

Reference years for the Countries

Countries	Tariff	Import	Countries	Tariff	Import
Albania	2001	2000	Korea	1999	1999
Algeria	2001	2000	Lao PDR	2000	2000
Antigua	2001	2001	Latvia	2001	2000
Armenia	2001	2000	Lebanon	2001	2001
Australia	2001	2001	Libya	1996	1996
Bahamas	1999	1999	Lithuania	1997	1997
Bahrain	2001	2000	Madagascar	1995	1995
Bangladesh	2000	2000	Malawi	2001	2001
Barbados	2001	2000	Malaysia	1997	1997
Belarus	1997	1998	Maldives	2001	2000
Belize	2001	1999	Mali	2001	2001
Bemuda	2001	2001	Malta	2000	2000
Benin	2001	1998	Mauritania	2001	2001
Bhutan	1996	1999	Mauritius	1998	1998
Bolivia	1999	1999	Mexico	2001	2000
Bosnia and Herz	2001	2001	Moldova	2001	2000
Brunei	1992	1992	Morocco	2001	2001
Bulgeria	2001	2000	Mozambique	2001	2001
Burkina Faso	2001	2001	New Zealand	2000	2000
Cameroon	2001	2001	Nicaragua	2001	2000
Canada	2001	2000	Niger	2001	1998
Central African Rep	2001	2001	Norway	2001	2001
Chad	2001	2001	Oman	1997	2000
Chile	2001	2000	Pakistan	2001	2001
China	2001	2000	Panama	2001	2000
China (Taiwan)	2001	2000	Papua New Guinea	1997	1997
Colombia	2001	2000	Paraguay	2001	2000
Congo Rep.	2001	2001	Peru	2000	2000
Costa Rica	2001	2000	Philippines	2001	2000
Cote d'Ivoire	2001	2001	Poland	2000	2000
Croatia	2001	2000	Romania	2001	2000
Cuba	1997	1997	Russia	2001	2000
Czech Rep	1999	1999	Rwanda	2001	2001
Dominica	2001	2000	Saudi Arabia	2000	2000
Dominican Rep	2000	2000	Senegal	2001	2000
Ecuador	1999	1999	Seychelles	2001	1996
Egypt	1998	1998	Slovenia	2001	2000
El Salvador	2001	2000	Solomon Islands	1995	1995
Equational Guinea	2001	2001	South Africa	2001	2000
Estonia	1995	1995	Sri Lanka	2001	1999
Ethiopia	2001	2001	St. Kitts Nevis	2001	2000
EU	2001	2000	St. Lucia	2001	2000
Formar Yug Macedonia	2001	1999	St. Vincent & Grenadines	2001	2000
Gabon	2001	2001	Sudan	1996	1996
Georgia	1999	1999	Thailand	2000	2000
Ghana	2000	2000	Togo	2001	2000
Guatemala	2001	2000	Trinidad & Tobago	2001	2000
Guinea-Bissau	2001	2001	Tunisia	1998	2000
Guyana	2001	2001	Turkey	1999	1999
Honduras	2001	2000	U. Rep. Of Tanzania	2000	1999
Hungary	1997	1997	Uganda	2001	2000
Iceland	2001	2001	Ukrainian	1997	1997
India	2001	1999	Uruguay	2001	2000
Indonesia	2000	2000	USA	2001	2001
Iran	2000	2000	Uzbekistan	2001	2001
Israel	1993	1995	Venezuela	2000	2000
Jamaica	2001	2000	Vietnam	2001	2001
Japan	2001	2000	Zambia	1997	1997
Jordan	2001	2000	Zimbabwe	2001	2001
Kenya	2001	2000			

Source: TRAINS, UNCTAD

Appendix 3

Harmonized System Codes (HS-Codes)- Commodity Classification

The Products Classified by Harmonised System (HS) is standard code for importer and exporter used by international trade and developed under the auspices of the Customs Cooperation Council. The Harmonised Code consists of 10 digits number. It is a system of progressively more specific identifiers for a commodity. For example, concentrated frozen apple juice is assigned a 10-digit identifier. This number is an aggregate of a series of codes starting with a broad category assigned a 2-digit identifier described as Preparations of Vegetables, Fruit, Nuts etc. It is then assigned a 4-digit identifier described as fruit juices and vegetable juices, etc. The 6-digit identifier is described as apple juice. The HS Code list is thus a hierarchical structure. The first 2 digits of a code represent a broad category. Additional digits are added in pairs to represent increasingly specific sub-categories until all 10 digits have been given.

2 Digits HS Code Reference

Live animals; animal products
01 live animals
02 meat & edible meat offal
03 fish & crustaceans
04 dairy, eggs, honey, & ed. products
05 products of animal origin
Vegetable products
06 live trees & other plants
07 edible vegetables
08 ed. fruits & nuts, peel of citrus/melons
09 coffee, tea, mate & spices>
10 cereals
11 milling industry products
12 oil seeds/misc. grains/med. plants/straw
13 lac, gums, resins, etc.
14 vegetable plaiting materials
15 animal or vegetable fats, oils & waxes
Prepared food; beverages, spirits, tobacco
16 ed. prep. of meat, fish, crustaceans, etc
17 sugars & sugar confectionery
18 cocoa & cocoa preparations
19 preps. of cereals, flour, starch or milk
20 preps of vegs, fruits, nuts, etc.
21 misc. edible preparations
22 beverages, spirits & vinegar
23 residues from food industries; animal feed
24 tobacco & manuf. tobacco substitutes
Mineral products
25 salt; sulphur, earth & stone, lime & cement
26 ores slag & ash
27 mineral fuels, oils, waxes & bituminous sub chemicals & allied industries
28 inorganic chem, org/inorg compounds of precious metals,
29 organic chemicals
30 pharmaceutical products
31 fertilizers
32 tanning or dyeing extracts; dyes, pigments; paints & varnishes; putty; & inks
33 oils & resinoids, perfumery, cosmetic or toilet preparations
34 soaps, waxes, scouring products, candles, modeling pastes, dental waxes
35 albuminoidal sub, starches, glues, enzymes
36 explosives, matches, pyrotechnic products
37 photographic or cinematographic goods
38 miscellaneous chemical products
Plastics/rubbers & articles thereof
39 plastics & articles thereof
40 rubbers & articles thereof
Raw hides, skins, leather, & furs
41 raw hides & skins & leather
42 articles of leather, saddlery & harness, travel goods, handbags, articles of gut
43 furskins & artificial fur, manufactures
Wood/wood charcoal/cork/straw/plaiting materials and articles thereof
44 wood & articles of wood; wood charcoal
45 cork & articles of cork

46 manu. of straw, esparto, or other plaiting

Materials, basketware and wickerwork paper and articles thereof
47 pulp of wood, waste & scrap of paper
48 paper & paperboard, articles of paper pulp
49 printed books, newspapers, pictures, manuscripts, typescripts & plans
Textiles & textile articles
50 silk, inc. yarns & woven fabrics thereof
51 wool & fine or coarse animal hair, inc.
Yarns & woven fabrics thereof
52 cotton, inc. yarns & woven fabrics thereof
53 veg. textile fibers nesoi, yarns & woven etc.
54 man-made filaments, inc. yarns & woven etc.
55 man-made staple fibers, inc. yarns etc.
56 wadding, felt & nonwovens, special yarns;
Twine, cordage, ropes & cables & articles
57 carpets & other textile floor coverings
58 special woven fabrics, tufted textiles; lace
59 impregnated, coated, covered, or laminated
Textile prod, textile prod for industrial use
60 knitted or crocheted fabrics
61 articles of apparel & clothing accessories-knitted or crocheted
62 articles of apparel & clothing accessories-not knitted or crocheted
63 made-up textile articles nesoi; needlecraft sets; worn clothing; rags
Footwear, headgear, umbrellas, walking sticks, riding crops & parts thereof
64 footwear, gaiters, & the like
65 headgear & other parts
66 umbrellas, sun umbrellas, walking-sticks, whips, riding-crops & parts
67 prepared feathers, human hair & articles thereof, artificial flowers
Articles of stone, plaster, cement, asbestos, mica or similar materials, glass & glassware
68 articles of stone, plaster, cement, asbestos, mica or similar materials
69 ceramic products
70 glass & glassware
Pearls, precious stones/metals and articles thereof; imitation jewelry; coins
71 pearls, stones, prec. metals, imitation jewelry, coins
Base metals & articles of base metal
72 iron & steel
73 articles of iron or steel
74 copper & articles thereof
75 nickel & articles thereof
76 aluminum & articles thereof
78 lead & articles thereof
79 zinc & articles thereof
80 tin & articles thereof
81 base metals nesoi; cermets; articles etc.
82 tools, spoons & forks of base metal
83 miscellaneous articles of base metal
Machinery & mechanical appliances; electrical equipment/appliances, parts & accessories
84 nuclear reactors, boilers, machinery & mechanical appliances, computers
85 electrical machinery & equip. & parts; telecommunications equip., sound recorders, television recorders
Vehicles, aircraft, vessels & associated transportation equipment
86 railway or tramway locomotives, rolling stock, track fixtures & fittings, signals
87 vehicles other than railway or tramway rolling stock
88 aircraft, spacecraft, & parts thereof
89 ships, boats, & floating structures
Optical, photographic, measuring, checking,precision, medical or surgical instruments; clocks & watches; musical instruments; parts & accessories thereof
90 optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments & accessories
91 clocks & watches & parts thereof
92 musical instruments; parts & accessories
93 arms & ammunition; parts & accessories
Miscellaneous manufactured articles
94 furniture; bedding, cushions; lamps & lighting fittings nesoi; illuminated signs, nameplates & the like, prefabricated buildings
95 toys, games & sports equip; parts & acces.
96 miscellaneous manufactured articles

Source: TRAINS, UNCTAD

Appendix 4

Database for Cross-Country Regression in Equation (3)

Countries	TRB	XY	PCY	POP	LIT	D
Albania	9.11	18.89	8.99	3411.00	84.69	5.29931
Algeria	17.81	42.36	16.06	30399.00	66.70	4.76335
Armenia	2.59	23.35	9.76	3803.00	98.42	5.55963
Australia	3.59	19.91	238.38	19182.00	99.00	14.97517
Bahrain	6.61	81.93	102.63	691.00	87.56	7.2939
Bangladesh	17.48	13.98	3.73	131050.00	41.35	8.86644
Belarus	10.65	67.81	27.60	10005.00	99.58	4.43879
Belize	8.80	46.88	31.41	240.00	93.22	7.47291
Benin	10.24	15.39	4.14	6272.00	37.41	7.48765
Bhutan	12.72	29.61	5.32	805.00	44.20	8.53823
Bolivia	8.53	17.55	9.52	8328.70	85.51	10.10524
Bulgaria	10.43	58.47	15.03	8167.00	98.42	4.96338
Burkina Faso	10.24	10.73	2.52	11274.00	23.90	6.90493
Cameroon	14.95	30.73	6.75	14876.00	75.81	7.87257
Central Af. Rep	14.95	13.01	3.39	3717.00	46.72	7.98877
Chad	14.95	16.57	2.18	7694.00	42.60	7.21208
Chile	7.08	31.85	53.54	15211.00	95.81	11.57333
China	13.16	25.89	8.24	1262500.00	84.13	8.076735
Colombia	10.47	21.85	22.90	42299.00	91.70	8.212735
Congo	14.95	78.58	8.41	3018.00	80.69	8.14622
Costa Rica	4.75	48.27	39.12	3811.00	95.59	7.98457
Cote d'Ivoire	10.24	45.87	7.43	16013.00	46.78	7.52158
Croatia	9.07	45.01	51.46	4380.00	98.28	4.36599
Dominica	8.13	50.76	33.71	73.00	94.00	7.38097
Dominican Rep	14.65	29.80	20.62	8373.00	83.63	6.79818
Ecuador	11.74	42.43	14.25	12646.00	91.61	8.78133
Egypt	16.59	16.14	12.26	63976.00	55.32	6.20897
El Salvador	6.10	27.60	17.52	6276.00	78.74	7.80924
Equational Guinea	14.95	94.88	15.99	457.00	83.24	7.09393
Estonia	0.06	83.67	44.31	1369.00	99.00	4.51107
Ethiopia	15.33	15.40	1.16	64298.00	39.11	8.17913
Gabon	14.95	37.01	43.78	1230.00	66.20	8.14622
Georgia	9.22	37.50	4.99	5024.00	99.00	5.55963
Ghana	12.01	49.19	4.13	19306.00	71.52	7.5375
Guatemala	5.78	20.02	15.58	11385.00	68.64	7.86436
Guinea-Bissau	10.24	31.76	2.10	1199.00	38.48	6.88274
Honduras	5.94	42.34	7.11	6417.00	74.61	7.70172
Hungary	9.37	62.55	54.25	10022.00	99.32	4.51489
Iceland	2.99	34.32	313.04	281.00	99.00	4.15534
India	25.42	13.95	4.59	1015900.00	57.24	8.08853
Indonesia	7.13	38.55	9.94	210420.00	86.86	12.19743
Iran	6.36	34.84	16.49	63664.00	76.31	6.63234
Jamaica	5.93	44.06	17.86	2633.00	86.88	7.00635
Japan	3.84	9.98	448.30	126870.00	99.00	9.56016
Jordan	12.27	42.38	16.17	4886.80	89.67	6.25125
Kenya	15.57	26.49	3.28	30092.00	82.42	9.03607
Korea	7.91	44.98	130.62	47275.00	97.76	8.36175
Lao PDR	8.01	36.31	4.50	5279.00	48.68	9.63199
Latvia	2.95	45.78	25.97	2372.00	99.80	4.51107
Lithuania	2.97	45.16	20.56	3695.00	99.56	4.43879
Macedonia FYR	11.94	45.22	25.30	2031.00	94.00	4.96338
Madagascar	5.87	24.64	2.46	15523.00	66.50	10.89804
Malawi	11.01	26.26	1.69	10311.00	60.15	10.01297
Malaysia	7.57	125.49	47.97	23270.00	87.46	10.97963
Mali	10.24	25.02	2.88	10840.00	41.46	7.08018
Mauritania	9.28	41.43	4.96	2665.00	40.23	6.32935
Mauritius	21.15	63.53	44.29	1186.10	84.53	11.39164
Mexico	14.64	31.40	38.19	97966.00	91.42	7.70136
Moldova	4.31	49.82	6.36	4282.00	98.86	4.9846
Morocco	23.43	31.22	13.70	28705.00	48.87	5.02213
Mozambique	11.40	15.17	1.91	17691.00	44.03	10.96857
Nicaragua	4.11	40.15	4.66	5071.00	66.53	7.84977
Niger	10.24	15.46	2.03	10832.00	15.94	6.90092
Norway	2.10	46.61	379.54	4491.00	99.00	4.12804
Pakistan	16.56	15.53	5.16	138080.00	43.23	7.57705
Panama	6.70	33.15	32.79	2856.00	91.89	7.93854
Papua New Guinea	15.53	44.92	9.27	5130.00	63.89	12.87277
Paraguay	10.91	20.28	17.00	5496.00	93.28	10.72046
Peru	11.76	15.98	23.68	25661.00	89.89	9.85604

Countries	TRB	XY	PCY	POP	LIT	D
Philippines	6.29	56.30	11.67	75580.00	95.29	10.27344
Poland	10.16	27.44	42.23	38650.00	99.73	4.43879
Romania	13.99	34.06	14.60	22435.00	98.12	4.9846
Russia	9.71	45.88	24.55	145560.00	99.55	5.00714
Rwanda	8.44	8.31	2.42	8508.00	66.79	8.86969
Saudi Arabia	10.22	49.57	67.29	20723.00	76.30	7.26126
Senegal	10.24	30.54	6.09	9530.00	37.35	6.63199
Seychelles	20.88	78.38	70.00	81.23	84.00	11.36437
Slovenia	8.31	59.13	116.59	1988.00	99.64	4.36599
South Africa	6.72	29.05	39.85	42801.00	85.26	11.43442
Sri Lanka	7.88	39.71	8.60	19359.00	91.64	9.98241
St. Kitties & Nevis	7.78	52.04	68.30	41.00	97.80	6.79818
St. Vincent	8.33	58.54	27.71	115.00	88.90	7.38097
Tanzania	13.65	14.68	1.90	33696.00	75.08	9.59113
Thailand	14.92	67.04	28.05	60728.00	95.50	9.96966
Togo	10.24	35.53	3.27	4527.00	57.15	7.72994
Trinidad	6.46	65.41	51.23	1301.00	93.77	7.38097
Tunisia	23.15	44.01	24.70	9563.50	71.02	4.92259
Turkey	8.61	24.36	31.34	65293.00	85.07	5.55963
Uganda	7.85	10.14	3.48	22210.00	67.07	8.75515
Ukrainian	7.34	61.41	8.96	49501.00	99.61	4.51489
United States	3.35	10.72	319.96	281550.00	99.00	4.20809
Uruguay	11.74	19.30	61.15	3337.00	97.74	11.49481
Uzbekistan	9.10	44.13	4.85	24752.00	99.21	5.00714
Venezuela	10.63	29.38	33.00	24170.00	92.58	7.4923
Vietnam	12.93	46.2	3.56	78523.00	93.39	9.63199
Zambia	11.90	30.58	3.92	10089.00	78.15	9.96984
Zimbabwe	15.62	30.37	6.21	12627.00	88.68	10.2661

TRB = Trade barrier index; XY = Export-GDP ratio (per cent); PCY = Per capita GDP in constant 1995 US$ (in hundreds)
POP = Population (in thousands); LIT = Literacy rate (per cent); D = Weighted Distance (in hundred kilometers)