

Determinants of International Trade Disputes: Evidence from the WTO Regime

by

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I. INTRODUCTION

Since the inception of the World Trade Organization (WTO) in 1995, one of the most important questions that is constantly being raised and debated over is whether the new dispute settlement protocols covered by the Dispute Settlement Understanding (DSU) are sufficient to provide effective remedies against unfair trade practices. Critical questions such as what determines whether a country will involve into trade disputes or not, or if a country involves into trade disputes then what factors determine its chance of winning or losing the disputes- have always remained in focus. During the last decade, several writers attempted to answer these questions and ventured to assess if there was a bias in the new dispute settlement system of WTO by finding whether the new system was actually providing equal treatment to all the Members or not. The results of their findings were mixed.

Holmes, Rollo and Young (2003) attempted to find the significant factors for a country to involve in disputes and found that trade share is highly significant. They argued that the low volume of trade of the least developed countries explains their absence from the dispute settlements system. Based on their findings they also argued that the dispute settlement mechanism is not biased.

However, Busch and Reinhardt (2003) argued that “developing countries require more assistance in the lead up to a case, not just in litigating before a Panel... more attention needs to be directed at helping developing countries make more of consultations, as well as more of negotiations at the Panel stage prior to a ruling... wealthier countries have realized more favorable outcomes since 1995...”. Clearly,

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Busch and Reinhardt believed that the developing countries need additional help in trade disputes, suggesting implicitly that the system might be biased.

In the following year, Besson and Mehdi (2004), in a conference at the University of Paris argued that “developing countries are unlikely to obtain a favorable outcome because of asymmetric legal capacity.” They also suggested that “when a developing country is reliant on a developed country for bilateral assistance, it is unlikely to win dispute when it is opposed to the later”, suggesting that the dispute settlement system is biased against the developing countries.

An earlier research on bias in the dispute settlement system, done by Horn, Mavroidis and Nordstrom (1999), showed that export diversity and value explain the dispute pattern. However, they did not find significant roles played by legal capacities and “power” factors. Thus, they argued that “no evidence is found to suggest that large countries target small countries disproportionately, or that small countries” bring fewer complaints against large countries’, meaning the WTO dispute settlement mechanism is not biased.

Park and Umbricht (2001) provided detailed information on trade dispute issues and pattern, and identified the mostly disputed WTO Agreements. However, they did not draw any conclusion regarding biasness of the dispute settlement system.

We have, in this paper, addressed the same issue but with a wider data set. The analysis has been carried on in three steps. In the first step we used regression technique to determine the significant factors that determine the rate of involvement of a country into trade disputes and the factors that determine the pattern of results of the disputes. The second step continues with analysis on the trend of trade disputes during the WTO regime. Finally, in the third step, we drew conclusions and recommendations based on a combined picture depicted by using the findings from the previous two steps.

II. REGRESSION MODELS AND RESULTS

We have two distinct issues to test. First, finding the factors that determine the magnitude of a country’s involvement into trade disputes. And second, finding the factors that determine or influence the outcome of a dispute. In the former case, we further divided the factors into two categories- factors that determine the magnitude of a country’s involvement as a complainant and factors that determine the magnitude of a country’s involvement as a defendant. Such separation was necessary as the relationships between the some explanatory variables and the

dependent variable change depending on the category of a country at dispute.¹ Another consideration was that set of explanatory variable changes depending on a country's appearance in a dispute as a complainant or a defendant (Appendix Table 1 provides a description of the dependent and explanatory variables). For example, while finding the factors determining the outcome of a dispute, we considered the number of months taken by a dispute to reach a solution (TIME) as an explanatory variable. In this case, the dependent variable was a dummy (one for winning the dispute, zero otherwise). Intuitively, the logic is, as the duration of a dispute is prolonged it imposes additional cost for both the complainant and the defendant. Now, if the dispute is such that the complainant is a developing country and the defendant is a developed one, then the prolonged and pending state of the dispute penalizes the developing country relatively more. Because, for developing countries, the opportunity cost of that extra resource engaged in a prolonged dispute is relatively higher. Therefore, as the duration of a dispute increases the chance that the developing country will win reduces, and conversely, the chance for the developed country to win increases. Thus, we have assumed that a negative coefficient of the variable TIME would be found when the complainant is a developing country. On the other hand, we assumed that a positive coefficient of the same variable would be found when the complainant is developed one.

II.1 Determinants for the Complainants

So far, out of the 150 members of WTO only 40 members have appeared in the disputes as complainants. We collected data of the explanatory variables over a ten-year range (1995-2004) and constructed a panel data set. Then, the following model has been estimated to identify the factors that determine the magnitude of a country's involvement into disputes as a complainant.

$$\text{NODISP} = \exp(C + \beta_1 \text{GDPS}_{it} + \beta_2 \text{XDIV}_{it} + \beta_3 \text{XS}_{it}) + e_{it} \quad (1)$$

Where,

- NODISP = Number of dispute lodged by a country in a year
- GDPS = Percentage share of the complainant in the total world GDP
- XDIV = Number of lines of export (3-digit SITC level) of the complainant
- XS = Percentage share of the complainant in the total world export
- C = Constant term

¹ Countries were divided into four groups: developed (DD), developing (DG), newly industrialized (NIC) and transitional economy (TEC). A list of countries at dispute has been provided in Appendix 2.

As the number of dispute is not a continuous variable, we applied Poisson regression technique instead of the OLS. In this case, the probability density function of the Poisson distribution is:

$$f(\text{NODISP}) = \frac{\mu^{\text{NODISP}} \exp(-\mu)}{\text{NODISP}!} \quad (2)$$

Where,

$$\mu = \exp(C + \beta_1 \text{GDPS}_{it} + \beta_2 \text{XDIV}_{it} + \beta_3 \text{XS}_{it}) \quad (3)$$

Using the model described in equation (1) three regressions have been conducted. In the first regression all countries of all categories, i.e. the developed, developing, newly industrialised and transitional economies, have been included. In the second regression, only the disputes where the developed countries appeared as complainants were considered. In the third, only the disputes in which all countries except the developed countries appeared have been considered. In all the three regressions, all the explanatory variables have been found to be significant at 95 per cent level of significance. The coefficients of GDPS and XDIV have been found to be positive and XS to be negative. This intuitively makes sense. Increase of share in the world GDP indicates a country's enhanced financial strength. If financial strength of a country consolidates, then it becomes easier for that country to contest a dispute. Similarly, if a country's export products' diversity increases the probability for that country of facing disputable measures imposed by the importers also increases. On the other hand, as long as a country's export share increases, then that country might not want to engage into disputes and might be interested to keep its export as much undisputed as possible. Therefore, the negative sign of the coefficient of the XS variable seems logical. The regression results are as follows.

TABLE I
ALL COUNTRIES OF ALL CATEGORIES AS COMPLAINANTS

Dependent Variable: NODISP

Method: ML/QML - Poisson Count

Included observations: 400

Variable	Coefficient	Std. Error	z-Statistic	Prob.
GDPS	0.099735	0.006953	14.34450	0.0000
XDIV	3.165031	0.841612	3.760679	0.0002
XS	-0.015874	0.006182	-2.567886	0.0102
C	-8.678562	2.129950	-4.074538	0.0000

Source: Authors' own calculation based on the information provided by the WTO.

TABLE II
DEVELOPED COUNTRIES AS COMPLAINANTS

Dependent Variable: NODISP

Method: ML/QML - Poisson Count

Included observations: 90

Variable	Coefficient	Std. Error	z-Statistic	Prob.
GDPS	0.092749	0.008446	10.98124	0.0000
XDIV	28.88607	5.869054	4.921758	0.0000
XS	-0.033422	0.007603	-4.395843	0.0000
C	-74.89773	15.16951	-4.937385	0.0000

Source: Authors' own calculation based on the information provided by the WTO.

TABLE III
ALL COUNTRIES (EXCLUDING DEVELOPED) AS COMPLAINANTS

Dependent Variable: NODISP

Method: ML/QML - Poisson Count

Included observations: 310

Variable	Coefficient	Std. Error	z-Statistic	Prob.
GDPS	0.792884	0.128833	6.154359	0.0000
XDIV	1.849187	0.758870	2.436765	0.0148
XS	-0.417572	0.114459	-3.648228	0.0003
C	-5.582940	1.879489	-2.970456	0.0030

Source: Authors' own calculation based on the information provided by the WTO.

Using these results it is possible to predict the probability of a country to involve into disputes as a complainant. For example, if a country's GDPS = 0.20, XDIV = 2.10 and XS = 0.09, then using Table I the probability for that country to involve in less than 2 disputes is-

$$\begin{aligned} \mu &= \exp(-8.678562 + 0.099735 * 0.20 + 3.165031 * 2.10 - 0.015874 * 0.09) = 0.13352 \\ P(\text{NODISP} < 2) &= P(\text{NODISP} = 0) + P(\text{NODISP} = 1) \\ &= \frac{(0.13352)^0 \exp(-0.13352)}{0!} + \frac{(0.13352)^1 \exp(-0.13352)}{1!} = 0.99 \end{aligned}$$

This means that a country with the given attributes has almost no chance to lodge more than one complaint. In this case we have used the data of Bangladesh and Bangladesh has lodged only one complaint so far. Similarly, if GDPS = 30, XDIV = 2.61 and XS = 40, then the probability that a country with these attributes will involve in less than 8 disputes each year is-

$$P(\text{NODISP} < 8) = P(\text{NODISP} = 0) + \dots \dots \dots + P(\text{NODISP} = 6) = 0.62$$

This is the data of EC and so far EC has, on average, lodged 7 complaints each year.

II.2 Determinants for the Defendants

The total number of defendant countries is 45. Three regressions have been carried out in a similar manner to those of the previous section. However, we dropped XS and XDIV from the new model and included three new variables—MS, MDIV and TARIFF—in it. The following model has been estimated to find out the determinants for defendants.

$$\text{NODISP} = \exp(C + \beta_1 \text{GDPS}_{it} + \beta_2 \text{MDIV}_{it} + \beta_3 \text{MS}_{it} + \text{TARIFF}_{it}) + e_{it} \quad (4)$$

Where,

- MDIV = Number of lines of import (3-digit SITC level) of the defendant
- MS = Percentage share of the defendant in the total world import
- TARIFF = Average ad-valorem import tariff rate imposed by the defendant
- C = Constant term.

In the first regression, all the countries that appear as defendants have been included. In the second regression, only the disputes where the developed countries appeared as defendants have been included, and finally, in the third regression, all countries except the developed have been included. Applying Poisson technique, the regressions produced following results.

TABLE IV
ALL COUNTRIES OF ALL CATEGORIES AS DEFENDANTS

Dependent Variable: NODISP

Method: ML/QML - Poisson Count

Included observations: 360

Variable	Coefficient	Std. Error	z-Statistic	Prob.
GDPS	0.146097	0.009876	14.79308	0.0000
MS	-0.034861	0.008582	-4.061976	0.0000
MDIV	2.057815	3.563572	0.577458	0.5636
TARIFF	1.811148	0.338934	5.343656	0.0000
C	-7.069357	9.189524	-0.769284	0.4417

Source: Authors' own calculation based on the information provided by the WTO.

TABLE V
DEVELOPED COUNTRIES AS DEFENDANTS

Dependent Variable: NODISP

Method: ML/QML - Poisson Count

Included observations: 130

Variable	Coefficient	Std. Error	z-Statistic	Prob.
GDPS	0.126450	0.011806	10.71071	0.0000
MDIV	34.52415	12.00693	2.875353	0.0040
MS	-0.008616	0.010571	-0.815056	0.4150
TARIFF	11.44142	2.370332	4.826927	0.0000
C	-93.84074	31.44197	-2.984570	0.0028

Source: Authors' own calculation based on the information provided by the WTO.

TABLE VI
ALL COUNTRIES (EXCLUDING DEVELOPED) AS DEFENDANTS

Dependent Variable: NODISP

Method: ML/QML - Poisson Count

Included observations: 230

Variable	Coefficient	Std. Error	z-Statistic	Prob.
GDPS	0.469393	0.172056	2.728145	0.0064
MDIV	1.707042	4.198789	0.406556	0.6843
MS	-0.227078	0.159781	-1.421178	0.1553
TARIFF	0.925581	0.523694	1.767409	0.0772
C	-5.775777	10.75932	-0.536816	0.5914

Source: Authors' own calculation based on the information provided by the WTO.

The results produced above are mixed. In the first regression, where all categories of countries have been included, GDPS, MS and TARIFF variables have been found to be significant at 95 per cent level of significance. On the other hand, in the second regression, GDPS, MDIV and TARIFF variables have been found to be significant at 95 per cent level of significance. In the third regression, neither the MDIV nor MS has been found to be significant at 95 per cent level. In the third regression, only GDPS has been found significant at 95 per cent level. This indicates that financial strength is an important determinant for all categories of countries for involving into disputes. On the other hand, while MDIV is a significant determinant for the developed country, it has found to be of little importance for the developing, newly industrialised and transitional economy countries. TARIFF variable seems to be important for all categories of countries. However, while it is significant for the developed countries at 95 per cent level, for the other categories it is significant at only 90 per cent level.

II.3 Determinants for the Outcome of a Dispute

For finding out what factors influence significantly the outcome of a dispute dependent dummy variable regression technique has been applied. We applied both LOGIT and PROBIT models for estimation purposes. As the marginal and predicted probabilities are only slightly different between these two models, we mainly chose to present the LOGIT estimation results, as it is easier to interpret. Also in this case

we conducted three regressions. The first one includes a sample of randomly chosen 119 countries covering all categories of countries. The second one includes a sample where the developed countries lodged complaints only against other categories and the third one includes a sample where the other categories lodged complaints only against the developed countries. The purpose of conducting these three regressions is to find out if the magnitude of influence of the determinants varies depending on the category of a country. The marginal and predicted probabilities have been computed using the following probability density function.

$$\text{Marginal Probability: } f(\text{RESULT}) = \frac{e^{-\text{RESULT}}}{(1 + e^{-\text{RESULT}})^2}, \quad -\infty < \text{RESULT} < \infty \quad (5)$$

$$\text{Predicted Probability: } F(\text{RESULT}) = \frac{1}{1 + e^{-\text{RESULT}}} \quad (6)$$

Where,

$$\text{RESULT} = C + \beta_1 \text{GDPR}_{it} + \beta_2 \text{XCDS}_{it} + \beta_3 \text{TIME}_{it} \quad (7)$$

- GDPR = GDP of the complainant/GDP of the defendant
- XCDS = export of the complainant that goes to defendant's market/total export of complainant
- TIME = duration of a dispute expressed in number of months
- C = constant term.

In the first regression, GDPR and TIME were found to be significant at 95 per cent level. On the other hand, in the second regression TIME was found to be significant at 95 per cent level and GDPR was found to be significant at 90 per cent level. However, in the third regression none of the variables was found to be significant. This indicates that relative financial strength and duration of time play important role for the developed countries to win a dispute. Logical explanation also supports this. The higher the value of the GDPR, the higher the strength of the complainant compared to the defendant and the higher the ability of complainant to win by generating higher amount resources for the dispute settlement. Also, if TIME is high then cost of a dispute increases and consequently, it makes relatively more difficult for the developing countries to engage in a dispute over a long period of time. The regression results that we found are as follows.

TABLE VII
ALL CATEGORIES OF COUNTRIES AS EITHER COMPLAINANT
OR AS DEFENDANT

Dependent Variable: RESULT

Method: ML - Binary Logit

Included observations: 119

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	-1.146845	0.421096	-2.723477	0.0065
GDPR	0.108146	0.031236	3.462173	0.0005
XCDS	-0.086928	0.227060	-0.382840	0.7018
TIME	0.030889	0.014482	2.132942	0.0329
Obs with Dep=0	55;		Obs with Dep=1	64

Source: Authors' own calculation based on the information provided by the WTO.

TABLE VIII
DEVELOPED VS OTHERS

Dependent Variable: RESULT

Method: ML - Binary Logit

Included observations: 33

Variable	Coefficient	Std. Error	z-Statistic	Prob.
GDPR	0.060836	0.032849	1.851979	0.0640
XCDS	10.25802	17.59964	0.582854	0.5600
TIME	0.121559	0.052346	2.322199	0.0202
C	-2.998855	1.243262	-2.412086	0.0159
Obs with Dep = 1	25			
Obs with Dep = 0	8			

Source: Authors' own calculation based on the information provided by the WTO.

TABLE IX
OTHERS VS DEVELOPED

Dependent Variable: RESULT

Method: ML - Binary Logit

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.643570	0.854729	0.752952	0.4515
GDPR	-4.045713	5.768623	-0.701331	0.4831
XCDS	-0.782571	1.064944	-0.734847	0.4624
TIME	-0.017538	0.023718	-0.739425	0.4596
Obs with Dep=0	21	Total obs		37
Obs with Dep=1	16			

Source: Authors' own calculation based on the information provided by the WTO.

One point in regression 3 (Table IX) is noteworthy. Although none of the variables have been found to be significant, the sign of the coefficient TIME variable was consistent with our expectation. However, the coefficient sign of the GDP variable is negative and hence, does not match our expectation.

III. TRENDS OF TRADE DISPUTES DURING THE WTO REGIME

Notable patterns of the WTO disputes are that the developed countries' rate of participation is higher than other countries and that developed countries are being targeted more than any other countries. This is evident from the Table X (DD = developed; DG = developing; NIC = newly industrialised; TEC = transitional economy).

TABLE X
PARTICIPATION IN DISPUTES (PERCENTAGE) COVERAGE:
ALL CASES (TOTAL 346) UP TO JUNE 2006

Country Category	As Complainant	As Defendant
DD	57.49	59.89
DG	20.05	20.32
NIC	20.05	15.51
TEC	2.41	4.28

Source: Authors' own calculation based on the information provided by the WTO.

Table X shows that all the country categories have the same pattern in the dispute participation. The rate of participation as a complainant of any category is almost the same as the rate of participation as a defendant. It is reflected by the correlation coefficient ($r = 0.995$), which is very high. This indicates that if a country appears as a complainant then it is highly likely that it will also appear as defendant. However, in total, developed countries participate more in the disputes. The direction of these disputes was as follows (Table XI).

TABLE XI
DIRECTION OF DISPUTES (PERCENTAGE) IN ALL CASES UP TO JUNE 2006

		Defendant			
		DG	NIC	TEC	DD
Complainant	DG	5.88	2.94	0.27	10.96
	NIC	4.55	1.07	0.53	13.90
	TEC	0.27	0.27	1.87	0.00
	DD	9.63	11.23	1.60	35.03

Source: Authors' own calculation based on the information provided by the WTO.

Table XI shows that while developing countries lodge 10.96 per cent of total cases against the developed countries, developed countries lodge 9.63 per cent of total cases against the developing countries. The newly industrialised countries initiated slightly more complaints against the developed countries than the developed countries initiated against them. From this, it seems that there is no significant bias in the pattern of cases brought by different country categories. However, we found that there is an apparent bias in the outcome of disputes. Table XII might give us a primary idea about the pattern of this bias.

TABLE XII
DISPUTE RESULTS (PERCENTAGE) COVERAGE: 116 SETTLED DISPUTES

		Win	Lose
As Complainant	DD	87.50	12.50
	DG	80.00	20.00
	NIC	85.19	14.81
As Defendant	DD	18.75	81.25
	DG	6.25	93.75
	NIC	10.00	90.00

Source: Authors' own calculation based on the information provided by the WTO.

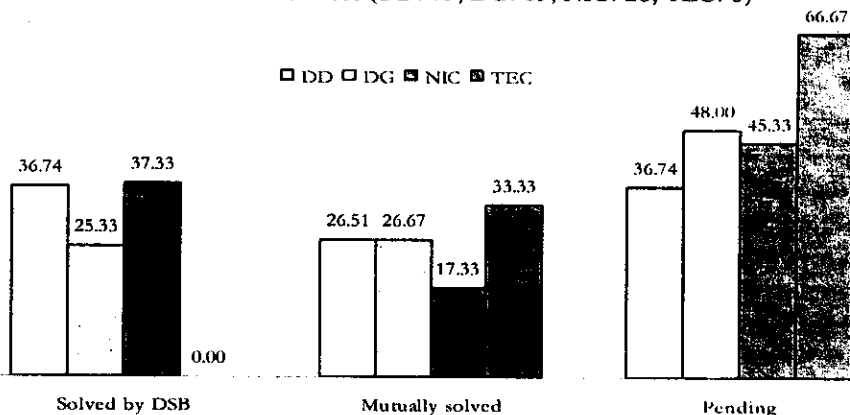
Table XII shows that as a complainant, a country wins more than 80 per cent of the disputes. This is true for any country category. However, the rate of winning is naturally quite the opposite for defendants. Table XII also indicates that when a developed country appears in dispute as a defendant, then it wins 12.50 percentage points more than the developing countries. This gap is narrower when countries appear as complainants. Considering that in both cases (as complainant and as defendant) developed countries win more than the developing countries, one can feel the presence of an apparent bias against the developing countries. This finding matches with the regression results presented in Tables VII and VIII, where we found that the chance of winning significantly increases with an increase in the financial strength. However, this is not a fault of WTO system, it is rather a consequence of reality that needs to be looked at.

Looking at the status of cases filed by different country categories adds further logic in favour of the existence of a bias against the developing countries. Figure 1 shows that developed countries failed to settle 36.74 per cent of their cases, while this rate of failure of developing countries is 48 per cent (11.26 percentage points higher). Newly industrialised countries also fail to settle a considerable amount (45.33 per cent) of their cases. At same time, the settlement rate of developed

countries' cases is higher than that of the developing countries'. This is reflected by the developed countries' share in the settled cases. Out of the total 374 cases, developed countries participated as complainant in 215 cases. Out of those 215 cases, they got 79 cases (36.74 per cent of developed countries' total disputes) solved by the Dispute Settlement Body (DSB) of WTO. On the other hand, developing countries lodged only 75 cases and they got only 19 cases (25.33 per cent of developing countries' total disputes) solved by the DSB.

FIGURE 1
CASE STATUS BY COUNTRY CATEGORY (PERCENTAGE)

Total pending : 155 cases (DD: 79 DG: 36, NIC: 34, TEC: 6)
 Total Mutually Solved : 93 cases (DD: 57, DG: 20, NIC: 13, TEC: 3)
 Total DSB Solved : 126 cases (DD: 79, DG: 19, NIC: 28, TEC: 0)



Source: Authors' own calculation based on the information provided by the WTO.

However, data on duration of the disputes does not apparently show any bias (Table XIII). The DSB takes almost the same time to give ruling on a dispute irrespective of the country category. For developed country it takes, on average, slightly more than 25 months to give its verdict, while for the developing countries it takes two and a half months less. For NICs the DSB takes almost the same time it takes for the developed countries. Mutually solved cases also follow a similar pattern considering that the differences between the times of different country categories are not high. We have calculated the duration of the pending cases by counting the months between its starting date and 30 June 2006. We found pending cases following similar trends to those solved by the DSB and solved mutually. The only difference between the trend of pending cases and other cases is that pending cases are hanging for a long time (on average almost 67 months).

TABLE XIII
DURATION OF CASES (MONTHS)

Country category	Solved by DSB	Mutually solved	Pending
DD	25.14	20.28	69.87
DG	22.42	22.65	69.81
NIC	24.18	16.23	62.62
TEC	NA	18.67	65.50

Source: Authors' own calculation based on the information provided by the WTO.

It is interesting to see that the pending cases hanging for such long periods despite the DSU clearly devises time frames for settling disputes. We understand that starting from a case brought to the DSB by a country until the end of the procedures taken by the Appellate Body (including ruling by the Appellate Body) it should take no more than 15 months.² Therefore, the lengths of pending cases are far beyond the guideline of the WTO.

IV. CONCLUSION

The discussion so far shows one thing very clearly that the developed countries are much more active in using the dispute settlement mechanism than the developing countries. In all the major areas of disputes (agriculture, anti-dumping, safeguard, TRIPS and countervailing measures) developed countries take leading positions both as complainants and as defendants. The percentage point gap of participation between the developed and the developing countries are 37.44 and 39.57 as complainants and as defendants respectively. Out of the total 374 cases,³ USA alone appeared in 83 cases as complainant and in 94 cases as defendant, followed by the EC in 72 cases as complainant and in 54 cases as defendant. On the other hand, among the developing countries India's participation is the highest with 17 cases as complainants and another 17 cases as defendant. Except for Chile (defendant in 10 cases), participation of other developing countries does not even reach two digit figures either as complainant or as defendant (see Appendix Table 3).

² 60 days for consultation, 45 days for Panel set up, 6 months for Panel Report, 3 weeks to final Panel Report to members, 60 days for adopting Panel Report, 90 days for Appellate Body Report and 30 days for adopting Appellate Body Report.

³ Total number of cases between 1995 and June 2006 is 346. However, when there are multiple complainants in a single case, we included each of the complainants as a different entry in our record. Therefore, the total number of cases increased to 374.

However, the high rate of participation of the developed countries and low rate of participation of the developing countries do not necessarily indicate that the WTO dispute settlement system is biased against the developing countries. We find from Table XI, instead, that the developed countries are being targeted more by the developing countries than the developing countries are targeted by them. Among all the cases, the developed countries were targeted in 59.89 per cent cases, while the developing countries were targeted in 20.33 per cent cases.

We found a symptom of bias when we analysed the outcome of the disputes. Our statistics show that the rate of winning of the developed countries is more than the developing countries when they appear as complainants in the disputes. We also found that the rate of losing of the developed countries is lower than that of the developing countries when they appear as defendants in the disputes. This creates an impression that the developed countries are getting more favourable outcome than the developing countries. Our regression results show that the size of GDP influences the outcome of a dispute. The higher the GDP of a country than its opponent, the higher its chance of winning. The WTO needs to look at this issue and acts to assist the developing countries, so that this gap of financial strength can be removed effectively from the dispute settlement process.

Looking at the case status adds further evidence in support of an existence of bias against the developing countries. Out of its total 215 cases, the developed countries got solution by the DSB in 36.74 per cent cases, mutually solved 26.51 per cent cases and have 36.74 per cent cases pending. These rates are 25.33 per cent, 26.67 per cent and 48 per cent for DSB solved, mutually solved and pending cases respectively for the developing countries. Clearly, the developing countries get lesser share of their cases solved by the DSB and their cases remain pending for longer period.

However, the DSB takes almost equal time to solve cases for the any country category. One notable point is that despite the DSU stipulates that a case is to be solved within 15 months of its initiation, the average duration of pending cases is more than 5 years for any country category. This is quite unusual and contradictory to the objective of providing solution to the disputing parties. Our regression results presented in Tables VIII and IX also support this.

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Appendix 1

Regression Variables and their Expected Behaviour

Dependent variables:

NODISP : Number of disputes lodged or defended by a country between 1995 and 2004.

RESULT : Dummy variable that takes the value 1 for a win, zero otherwise.

Independent variables:

- **GDPR**: Relative gross domestic product of the complainants and defendant of a dispute. This variable indicates relative financial strength of the parties at dispute. Collected and calculated from the WDI 2004.
- **MDIV**: Number of lines of import items of a country. Counted on the basis of a 3-digit level SITC collected from the ITC website.
- **MS**: Percentage share of a country in the total world import. Collected and calculated from the COMTRADE data base of the UN.
- **TARIFF**: Average ad-valorem tariff rate imposed by the defendant. Collected from the GTAP 6 data base.
- **TIME**: Number of months taken by a dispute to be solved. Collected and calculated from the World Trade Organization's (WTO) web site.
- **XCDS**: Percentage share of a complainant's total export that goes to the defendant's market. This reflects the dependency of the complainant on the defendant. Collected and calculated from the COMTRADE data base of the United Nations (UN).
- **XDIV**: Number of lines of export items of a country. Counted on the basis of a 3-digit level SITC collected from the ITC website.
- **XS**: Percentage share of a country in the total world export. Collected and calculated from the COMTRADE data base of the United Nations (UN).

Explanatory variables		Expected sign of coefficient					
		Complainant			Defendant		
		All countries combined	Developing/ Newly Industrialized/ Transitional Economy Country	Developed	All countries combined	Developing/ Newly Industrialized/Tran sitional Economy country	Developed
Determinants of involvement into dispute							
	GDPS	+	+	+	+	+	+
	MDIV				+	+	+
	MS						-
	XDIV	+	+	+			
	XS						
Determinants of winning a dispute	GDPR	+	+	+	+	+	+
	TIME		-	+		-	+
	XCDS	-	-	+		+	-

Source: Authors' own calculation based on the information provided by the WTO.

Appendix 2

LIST OF COUNTRIES CLASSIFIED INTO DIFFERENT CATEGORIES

Country Groups	Complainants and Defendants in the WTO Dispute Settlement Process	WTO Members Who did not Appear Either as a Complainant or a Defendant
Developed Countries (DD)	Australia, Canada, EC, Japan, New Zealand, Norway, Switzerland, USA	Iceland, Liechtenstein
Newly Industrialized Countries (NIC)	Argentina, Brazil, Hong Kong, Korea, Malaysia, Mexico, Singapore, Thailand	--
Developing Countries (DC)	Antigua and Barbuda, Bangladesh, Bolivia, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Egypt, Guatemala, Honduras, India, Indonesia, Nicaragua, Pakistan, Panama, Peru, Philippines, South Africa, Sri Lanka, Trinidad and Tobago, Turkey, Uruguay, Venezuela	Angola, Bahrain, Barbados, Belize, Benin, Botsowana, Brunei Darussalam, Burkina Faso, Burundi, Cameroon, Central African Rep., Chad, Congo, Cote d'Ivoire, Cuba, Cyprus, Djibouti, Dominica, El Salvador, Fiji, Gabon, Gambia, Ghana, Grenada, Guinea, Guinea-Bissau, Guyana, Haiti, Israel, Jamaica, Jordan, Kenya, Kuwait, Lesotho, Macau, Madagascar, Malawi, Maldives, Mali, Malta, Mauritania, Mauritius, Mojambique, Mongolia, Morocco, Myanmar, Namibia, Niger, Nigeria, Papua New Guinea, Oman, Paraguay, Qatar, Rwanda, Saint Kitts and Nevis, Saint Lucia, Saint Vincent & the Grenadines, Senegal, Sierra Leone, Solomon Islands, Suriname, Swaziland, Tanzania, Togo, Tunisia, UAE, Uganda, Zambia, Zimbabwe
Transitional Economies (TEC)	Czech Rep., Hungary, Poland, Slovak Rep., Croatia	Albania, Bulgaria, Estonia, Georgia, Rep. of Kyrgyz, Latvia, Slovenia

Appendix 3

PARTICIPATION OF COUNTRIES AT DISPUTE BY REGION

	Country	Region	Involvement as complainant (no. of disputes)	Involvement as defendant (no. of disputes)	Total (no. of dispute)	Total involvement by region (no. of dispute)
1	Egypt	Africa	0	4	4	
2	S. Africa	Africa	0	2	2	6
3	China	East Asia	1	4	5	
4	Chinese Taipei	East Asia	2	0	2	
5	Hong Kong	East Asia	1	0	1	61
6	Japan	East Asia	12	15	27	
7	Korea	East Asia	13	13	26	
8	Belgium	Europe	0	3	3	
9	Croatia	Europe	0	1	1	
10	Czech Rep.	Europe	1	2	3	
11	Denmark	Europe	0	1	1	
12	EC	Europe	72	54	126	
13	France	Europe	0	2	2	
14	Greece	Europe	0	2	2	
15	Hungary	Europe	5	2	7	
16	Ireland	Europe	0	3	3	
17	Netherlands	Europe	0	1	1	168
18	Norway	Europe	3	0	3	
19	Poland	Europe	3	1	4	
20	Portugal	Europe	0	1	1	
21	Romania	Europe	0	2	2	
22	Slovak Rep.	Europe	0	3	3	
23	Sweden	Europe	0	1	1	
24	Switzerland	Europe	4	0	4	
25	UK	Europe	0	1	1	
26	Canada	North America	27	14	41	
27	USA	North America	83	94	177	218
28	Australia	Oceania	7	9	16	
29	New Zealand	Oceania	6	0	6	22
30	Antigua & Barbuda	South & Central America	1	0	1	
31	Argentina	South & Central America	10	16	26	
32	Brazil	South & Central America	22	13	35	
33	Chile	South & Central America	10	10	20	
34	Colombia	South & Central America	4	1	5	
35	Costa Rica	South & Central America	4	0	4	
36	Dominican Rep.	South & Central America	0	3	3	163
37	Ecuador	South & Central America	3	3	6	
38	Guatemala	South & Central America	6	2	8	
39	Honduras	South & Central America	6	0	6	
40	Mexico	South & Central America	16	14	30	
41	Nicaragua	South & Central America	1	2	3	

(Contd. Appendix 3)

(Contd. Appendix 3)

	Country	Region	Involvement as complainant (no. of disputes)	Involvement as defendant (no. of disputes)	Total (no. of dispute)	Total involvement by region (no. of dispute)
42	Panama	South & Central America	2	1	3	
43	Peru	South & Central America	2	4	6	
	Trinidad & Tobago	South & Central America	0	2	2	
44	Uruguay	South & Central America	1	1	2	
45	Venezuela	South & Central America	1	2	3	
46	Bangladesh	South Asia	1	0	1	
47	India	South Asia	17	17	34	41
48	Pakistan	South Asia	3	2	5	
49	Sri Lanka	South Asia	1	0	1	
50	Indonesia	South-east Asia	3	4	7	
51	Malaysia	South-east Asia	1	1	2	
52	Philippines	South-east Asia	4	4	8	31
53	Singapore	South-east Asia	1	0	1	
54	Thailand	South-east Asia	12	1	13	
55	Turkey	West Asia	2	8	10	10
	Total		374	346	720	720

Source: Authors' own calculation based on the information provided by the WTO.