

**ANTIDUMPING: INIDIAN EXPERIENCE AND COMPARATIVE
PERSPECTIVE**

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It is an original contribution and has been completed during my tenure as a research scholar at Gokhale Institute of Politics and Economics, Pune.

This thesis has not been submitted by me elsewhere for the award of any degree or diploma-part or full. The information gathered by me elsewhere for the thesis is original, true and factual. Such material as has been obtain from other source has been duly acknowledged in the thesis. I hereby request, to consider the thesis for the award of the degree of ‘Doctor of Philosophy’.

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ABSTRACT

There has been substantial research on the trade effects of Anti-dumping actions of developed countries, particularly US and EU. Unfortunately there is little empirical research on developing countries like India, Brazil, Mexico and Argentina. This study will, therefore, help to bridge this gap and contribute to the existing literature in different dimension. As far as India is concerned, previous studies are more than a decade old and so they need up-gradation. India has emerged as a top AD user country with over 700 AD initiations in post -WTO era. This study assesses the trade effects of Indian AD initiations on the imports from the major Indian AD targets during the period 2003-2014. The analysis is carried out using the System Generalized Method of Moments (GMM) in dynamic panel data model (Arellano-Bond method). The result shows that the Indian AD policy has been ineffective in providing contingent protection to the domestic industry. Though the price effect of antidumping duty imposition is seen to be significant but the import quantity has not changed considerably. Thus, we rule out the possibility of trade diversion from named countries to unnamed countries. This attempt has been made to assess the industry specific trade effects, where industries have been grouped on the basis of use-based classification and even on the basis of harmonized system code. The industry level analysis reveals trade distortions effects on some industries and there sufficient evidence of trade diversion in some industries.

Key Words: International Trade, Anti-dumping, Trade Policy, WTO, Trade Effects

JEL Classification: F1, F13, F14, F51, F53

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LIST OF ABBREVIATIONS

AB	: Appellate Body
AD	: Antidumping
ADD	: Antidumping Duty
ASEAN	: Association of Southeast Asian Nations
COMTRADE	: UN's Trade data base
CUSFTA	: Canada-United States Free Trade Agreement
CVD	: Countervailing Duty
DSB	: Dispute Settlement Body
EEC	: European Economic Community
EU	: European Union
FE	: Fixed Effects
GATT	: General Agreement on Tariffs and Trade
GMM	: Generalized Method of Moments
HS	: Harmonized System
MFN	: Most Favored Nations
MOFCOM	: Ministry of Commerce (China)
NAFTA	: North American Free Trade Agreement
OECD	: Organization for Economic Co-operations And Development
OLS	: Ordinary Least Squares
QR	: Quantitative Restrictions
RE	: Random Effects
SAFTA	: South Asian Free Trade Agreement
SG	: Safeguard Measures
TTB	: Temporary Trade Barriers
UK	: United Kingdom
UNCTAD	: United Nations Conference on Trade and Development
US	: United States
USDOC	: United States Department of Commerce
VER	: Voluntary Export Restraints
WTO	: World Trade Organization

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Chapter I

Introduction

1.1 General Overview

The traditional measures of protectionism such as tariffs and quotas have declined sharply after the WTO and at the same time the use of new protectionist measures like antidumping duty, countervailing duty, VER etc. has gone up many fold. WTO members cannot raise their tariffs since they are bound by it. Therefore, protectionist pressure is often seen through the rampant use of neo-protectionist measures under the label of contingent protection or 'WTO'-legal protection such as antidumping, anti-subsidy (CVD) and safeguard tariffs. Bown (2009) has observed that WTO member countries have become more active in using trade remedy measures, particularly in the wake of the global economic crisis. The governments of these countries have responded to domestic protectionist pressures by imposing import restrictions during global economic crisis as shown by Evans and Sherlund (2006). After the inception of WTO, contingent protection has evolved into a global phenomenon with an increasing number of countries adopting contingent protection laws and making use of them. The bulk of contingent protection falls on the instrument of anti-dumping. Between 1995 and 2014, the number of anti-dumping accounted for 86.22 per cent of the total of the three main contingent measures (AD, CVD and Safeguards) used. The share of CVD remained as small as 6.8 per cent. Safeguards have been the least frequently used measures with their share being only 5.14 per cent over this period. Among the trilogy of trade remedy regimes- countervailing duty, safeguard measures and antidumping actions- antidumping actions are by far the remedy of choice. By the end of 1989, twenty eight countries adopted antidumping laws. Nearly 1200 actions were initiated between July 1980 and June 1988. Four countries actions accounted for 97.5 per cent of all actions brought: 30 per cent were brought by producers in the United States, 27 per cent brought in Australia, 22 per cent in Canada and 19 per cent in EU. Since the early 1980s, the number of countries that adopted an AD law has nearly doubled. While 37 countries had such laws in

1980, this number increased to 93 countries by the end of 2000 (Zanardi, 2004a) the extent of AD proliferation during the period 1980- 2000 most of the “new adopters” are developing countries. It does not seem to be confined to any particular region rather includes developing countries from Asia, Latin America and Eastern Europe (Vandenbussche and Zanardi 2009). But after the formation of WTO in 1995 antidumping has increased surprisingly. It is notable that developing countries like India and China have overtaken the traditional developed country user such as the EU and US as the largest users. This new development leads to interesting questions, particularly with respect to the use of the antidumping instrument by large developing countries. This thesis is an attempt to study the Indian experience of using antidumping measures from legal and economic aspects and also to have a comparative perspective.

1.2 A Brief History of AD Evolution

Dumping and antidumping have been a part of the rhetoric of political economy for a long period. We find many records mentioning dumping or similar activities in history. Jacob Viner (1923) was the first scholar to organize the earlier writings on this issue. He mentions a sixteenth century English writer who wrote that foreign suppliers sold paper at a loss to drive out the infant paper industry in England. Viner also noted that in the seventeenth century the Dutch were accused of selling in the Baltic regions at ruinously low prices in order to drive out French merchants. Similarly, Alexander Hamilton, in his *Report on Manufactures* of 1791 noted similar instances of dumping in the America.

Though we find many instances of dumping in history, anti-dumping laws were developed in the early twentieth century. The first antidumping law was adopted by the Canada in 1904. The Canadian government passed the tariff legislation, to protect domestic manufactures from foreign competition. The provisions that were adopted as an AD law were actually in the form of amendments to customs tariff act of 1897.

After Canada in 1905, New Zealand government introduced the AD laws. The antidumping law of 1905 was a response to the peculiar problem faced by New

Zealand and UK manufacturers of farm implements complained that a U.S. trust was attempting to monopolize the New Zealand market by price cutting. At the same time, New Zealand farmers insisted that farm implement should remain duty free, and they were vigilant in opposing other government actions that would increase their costs.

The government was looking for a way to balance on the edge between offending equipment manufacturers by not protecting them and also offending farmers by pushing up the cost of equipment. It established a commission to investigate complaints of unfair competition. Based on its recommendations, customs officials were empowered to provide subsidies to New Zealand and British manufacturers to match the "unfair" exporters' price cuts.

While the Canadian and New Zealand antidumping laws were generic responses to specific problems (steel rails in Canada and farm equipment in New Zealand), Australian regulation of 1906 was a generic response to a generic problem. Antidumping regulations were a section of law aimed at the general problem of controlling monopoly. The law was never applied, however in Viner's judgment (1923, 206) because it was too complicated. Within a few years of the passage of antidumping laws in Canada, Australia and New Zealand, antidumping laws were also passed in South Africa and Newfoundland. After that no new antidumping law was passed until 1921. The British government in this year passed an antidumping law that was even more complex than the unworkable Australian regulation of 1906. Action against imports would come only after nine steps had been taken. The US government also passed a similar law in 1921 to protect its domestic producers from the Germany's dumping. In that year Australia, New Zealand and Canada also passed new antidumping laws or made significant amendments to old ones.

After various countries individually adopted legislation on antidumping, multilateral initiatives commenced and a collective agreement was finally reached through GATT after 1947. Much of the history of the GATT negotiations is in fact the history of negotiating a charter for an international trade organization. The GATT began as a provisional agreement to implement the first set of tariff

reductions. The expectation at the time was that the international trade organization would eventually be the institutional framework for coordinating national trade policies, just as the International Monetary Fund is for monetary policies. When the international community could not agree to establish the international trade organization, the GATT became, by default, the framework for international coordination of trade policies.

In the course of negotiations at this multilateral forum, the contracting parties envisaged an elaborate plan for trade liberalization and undertook to facilitate further reduction of trade distorting practices in the future rounds. The US insisted that trade remedies should be included in the agreement. Due to its insistence in 1947 GATT incorporated basic conditions for adopting antidumping measures and AD regulations became an international law. The US AD regulations of 1921 formed the foundation for the Article VI of the GATT in 1947 (Irwing 2005). Through GATT's first two decades, antidumping was a major instrument of policy only in Australia, Canada and South Africa. Though the GATT came into force in 1948, the contracting parties (as GATT member countries are called) did not commit about the use of antidumping until 1958. The resulting tally showed a total of thirty-seven antidumping decrees in force across all GATT member countries as of May 1958 out of which twenty-two alone were in South Africa (GATT 1958, 14). Antidumping first became a significant GATT issue at the Kennedy Round of 1964-67. Its result was an agreement on the implementation of article VI (the antidumping code) which laid out detailed criteria and procedures for the invocation of antidumping actions. Signatories to the antidumping code in 1967 committed themselves to ensure that their domestic trade legislation was rendered consistent with the code. The main revisions to the code were related to causality and injury determination which were addressed in 1979 code (Tokyo Round). This code allowed for "normal value" (the generic term in the GATT for home-market price) to be determined on some basis other than market price in the exporting country when there are no sales of the like products in the ordinary course of trade. But still many problems and ambiguities continued and led to inconsistent antidumping practices and procedures throughout the world.

Therefore, the antidumping code needed a revision. It received attention in the recent Uruguay rounds of negotiations.

The table below gives a chronology of GATT/WTO rounds.

Table 1.1 : GATT/WTO Trade Negotiation Rounds			
Years	Place/Name	Subjects covered	Number of countries
1947	Geneva	Tariffs	23
1949	Annecy	Tariffs	13
1951	Torquay	Tariffs	38
1956	Geneva	Tariffs	26
1960-61	Geneva (Dillon Round)	Tariffs	26
1964-67	Geneva (Kennedy Round)	Tariffs and antidumping measures	62
1973-79	Geneva (Tokyo Round)	Tariffs, non-tariff measures, “framework”	102
1986-94	Geneva (Uruguay Round)	Tariffs, non-tariff measures, rules, services, intellectual property, dispute settlement, textiles, agriculture, creation of WTO	123
2002	Doha Round	All goods and services, tariffs, non- tariff measures, antidumping and subsidies, regional trade agreements, IPR, environment, dispute settlement	144
Source: www.wto.org			

The table lists the rounds of trade negotiation. It is clear from the table that the earlier GATT negotiations focused on further tariff reductions and AD remained a minor trade instrument. AD measures received attention as a subject of negotiation in the Kennedy Round (1964-67). It was the first serious attempt to negotiate an ADA. It produced a code on multilateral rules for antidumping. There after antidumping regulations were discussed in Tokyo round (1973-79). This round attempted to reform non-tariff barriers system. The major amendment introduced was the removal of the principal cause test, article 3(a) of Kennedy

round and Tokyo round negotiation. As far as dumping is concerned there were no significant improvements made in it.

1.3 Tariff Reduction and Proliferation of Contingent Protection Measures

We know that the Tariffs have been reduced to very low levels after several rounds of negotiations under the auspices of GATT in the first twenty-five years of its existence. Between 1953 and 1973, world trade growth was faster than the growth of world income and export were dominated by industrialized countries with a share of 71 per cent. In the 1960s the growth was dominated by intra-industry trade and growing incomes reduced the political costs of trade liberalization. US followed liberal trade policy in the belief that its interests were best served by it. U.S was willing to overlook the asymmetries in most favored nation (MFN) status with developing economies or even within members of the European Economic Community (EEC). However, the dominance of protectionist lobby was on the rise from the 1970s as US economy started faltering on account of the oil crisis. As a part of multilateral negotiations, US was committed to tariff reduction and therefore it was not possible to grant protection in the form of tariffs. That led to the increasing use of administered or contingent protection like countervailing duties (CVDs), anti-dumping duties (ADD) and negotiations for voluntary export restraints (VER) which are permitted within GATT and WTO frameworks. WTO members, mostly developed countries, started initiating more and more anti-dumping actions against their trading partners. Increasing use of AD actions by US became a bone of contention between it and EU and Japan. The obligations imposed by the WTO are nondiscriminatory for MFN status and even for tariff and non-tariff barriers. The developed countries are under obligation to implement their commitments within a shorter time period compared to developing nations. However WTO allows the use of countervailing and antidumping duties in case of unfair trade. Auboin and Laird (1997) point out how anti-dumping duty has become a key defense instrument of EU against developing country imports in order to protect its industries.

The post-Tokyo Round period witnessed a relative decline in VERs due to a rise in the use of 'GATT-consistent' contingent protection measures. But antidumping

measures surged, the use of safeguard measures did not change noticeably (Aggarwal 2003). A study by National Board of Trade, Sweden (2004), shows that EC and US had been the largest users of grey-area measures until 1970s. They became the largest antidumping users since 1980. Grey area measures were replaced by the use of antidumping measures and they became popular were followed by countervailing measures. Safeguard measure on the other hand were used rarely.

The surge of contingent protection measures as a set is also attributed to the tariff reduction which was an important issue during the process of multilateral trade negotiations and which have forced WTO members to reduce the tariff and other quantitative restrictions on trade. Thus has resulted in a sharp decline in the average applied tariffs among the WTO members. The use of contingent protection measures continued to increase in the post-WTO period. The use of AD measures has especially gone up after the formation of WTO (1995). The average applied tariffs have declined from 35 per cent in 1995 to 3 per cent in 2013.

The use of contingent protection such as countervailing duty, antidumping duty and safeguard measures have amplified dramatically after 1995. The initiations of contingent protection in a year increased significantly from 169 in 1995 to 415 in 1999 which more than the double. There was a slight decline in the initiations after 1999 till 2002 but after 2002 it declined even more due the decline in AD initiations. But the use of contingent protection measure is still high. Out of total contingent measures initiations antidumping initiations accounts for 86 per cent and countervailing duty and safeguards both together contribute only 14 per cent. The Table 3.2 depicts a time trends in the use of contingent protections by all the countries.

Table 1.2 : Initiations of Contingent Protection 1995-2014				
Year	CV	AD	SG	Total
1995	10	157	2	169
1996	7	226	5	238
1997	16	246	3	265
1998	25	264	10	299
1999	41	359	15	415
2000	18	296	25	339
2001	27	372	12	411
2002	9	311	34	354
2003	15	234	15	264
2004	8	220	14	242
2005	6	200	7	213
2006	8	203	13	224
2007	11	165	8	184
2008	16	218	10	244
2009	28	217	25	270
2010	9	173	20	202
2011	25	165	12	202
2012	23	208	24	255
2013	33	287	18	338
2014	45	236	23	304
Total	380	4757	295	5432
Share	6.88 per cent	86.22 per cent	5.14 per cent	100
Source: https://www.wto.org/english/tratop_e/adp_e/adp_e.htm				

1.4 Identifying Problems

Attempts have been made to study the impact of Antidumping Policy on the trade, especially for developed countries such as US and EU. However, there are few empirical studies on developing countries. As far as India is concerned, there are very few studies on the effectiveness of Indian AD policy. Ganguli (2008) studied empirically the effect of Indian AD policy on trade flows from other countries for 285 AD petitions filed in India during 1992-2002. He has used product level import data at six digit HS codes. He demonstrated that imports from targeted countries fall significantly and they are diverted to unnamed countries. Aggarwal (2010) has studied on the trade effects of Indian anti-dumping (AD) policy on 177

(8-digit) products involved in AD initiations during 1994- 2001. She finds that the investigation effects of Indian AD actions are not significant but the imposition of AD duties contains trade in terms of both volume and value and raises import prices significantly. While trade effects start dissipating in subsequent years, import prices of both named and unnamed countries rise significantly in the post-duty years. The developing trade partner countries suffer significant import losses when named. However, the trade destruction effect is insignificant for developed countries. Even though the unit value of their imports rises, there is no evidence of decline in trade from these countries (Aggarwal 2010). The limitations of both the studies are, that they are dated and need to be reviewed. They have estimated overall trade effects on all the commodities. But trade effects at a disaggregated level need to be evaluated. The trade effects on all the commodity groups cannot be uniform and therefore AD policy cannot be uniform for all the groups. Indian AD policy has been criticized by the other WTO members. Hence, it is an imperative to study and estimate its trade effects of Indian AD policy. This study intends to estimate the trade effects of India's AD policy on various commodity groups classified by HS code and use based classifications. The study also reviews trends and pattern of antidumping proliferation among WTO members in general and India in particular. The study also intends to study the DSB consultations to trace the inconsistencies of domestic legislations and practices of members.

1.5 Research Questions

In the backdrop discussed in the earlier section, this study tries to investigate the following research questions:

1. What are the recent trends and patterns in the proliferation of AD measures?
2. Who is targeted by whom?
3. What sectors are targeted by whom?
4. How was India's experience of AD policy?

5. What are the major issues in domestic AD legislations and practices among the major AD users?
6. What do the Dispute Settlement Body's panel reports reveal?
7. Who has misused or misinterpreted the WTO's Antidumping Agreement?
8. What are the trade effects on the import volume, import value and unit value of the overall imports of the dumped goods?
9. What are the trade effects on the import volume, import value and unit value of different commodity groups?
10. What are the trade effects of AD policy on imports from Named and Unnamed countries?
11. Is there a trade diversion from Named countries to Unnamed countries due to imposition of antidumping duty?

1.6 Objectives

To answer the above mentioned research questions, the study has been focused on the following objectives:

1. To study the trends and patterns in the proliferation of antidumping measures among the WTO members and a comparative perspective.
2. To study the antidumping laws and procedures of selected AD users and their consistencies and compatibility with the WTO AD laws.
3. To study the trade effects (signalling effects, initiation effects, duty imposition effect and actual duty effects) of Indian antidumping policy on imports of 'affected' sectors involved in the dumping investigations.
4. To study the trade effects of Indian AD policy on the imports from Named and Unnamed countries and also to check the possibility of trade diversion effect from Named to Unnamed countries.
5. To study the industry specific trade effects of AD policy by HS classification and further aggregated classification on 'use' basis.

1.7 Hypothesis

The set of hypotheses given below has been formulated on the basis of the previous empirical studies and theoretical works available in the literature. The present work has intended to study these hypotheses.

1. Antidumping has proliferated after the establishment of WTO. The use of AD measures by old /traditional users have been reciprocated by their counterparts (New Users) and that lead to surged in AD use.
2. There are several possible and potential areas of inconsistent provisions w.r.t. antidumping agreement.
3. The antidumping petitions, irrespective of their outcome, reduce aggregate import volume, total value of imports and raise unit value of the subject goods i.e. there is a duty effect along with significant signalling and initiation effects.
4. The price effects of anti-dumping are expected to be positive and thereby reduce the import quantity.
5. Assuming that the AD duty forces import prices to rise, it is expected that imports will be affected adversely. However, if import elasticity is low, the volume effect will be insignificant. In India, the price elasticity of imports of named products is expected to be low and therefore the volume effects may be insignificant.
6. Reduction in the overall imports of subject goods from Named countries has compensated by the increased imports from the Unnamed countries and so there is a significant trade diversion effect of AD.
7. Trade effects of AD policy across various commodity groups and industries (classified on the used basis and HS group) are diverse.

1.8 Methodology and Data Description

To infer and test the hypotheses and answer the abovementioned research questions, the following methods and techniques have been applied:

The data used in this study have been compiled from various secondary sources. To carry out the analysis of trends and patterns in the proliferation of antidumping

measures by WTO member countries, data have been compiled from WTO antidumping database and other respective national authorities. For the analysis of legal discourse of the antidumping measures, we have used actual DSB Panel reports and WTO case law along with the domestic legislations of the respective countries. Till date there have been 113 requests for consultation to the Dispute Settlement Body of WTO. Around fifty requests have been resolved by DSB and some are still at consultations stage. The empirical analysis that is intended in the Chapter 5 and 6 is based on the methodology that is previously established and used by the Thomas Prusa (1999, 2004), Brenton (2001), Konings et al (2001), Ganguli (2008) and many others.

In order to carryout empirical analysis, we have used the Anti-Dumping (AD) database developed by Bown (2010) to collect the details of the dumping cases i.e date of initiation, date of duty imposition, AD duty imposed, type of product, country, final duty imposed etc.

The empirical analysis that is intended in the thesis is based on the methodology that is previously set and used by the Thomas Prusa (1999, 2004), Brenton (2001), Konings et al (2001), Ganguli (2008) and many others. The AD database developed by Bown (2010) has been referred to compile the details of the dumping cases (date of initiation, date of duty imposition, AD duty imposed, type of product, and country, final duty imposed etc.). For the empirical analysis of trade effects of AD, 95 antidumping case from India's major targets (China, US, EU, Thailand, Malaysia, Indonesia, Korea and Japan) having involved in more than ten AD cases initiated between 2003 and 2014 are selected. Total 142 products were involved in these 95 cases. Some initiations/cases have more than one countries (named countries) and sometimes more than one commodities involved. The named countries in each investigation are treated as an independent case so that country wise and region wise trade effects can be assessed separately. Some cases have been dropped due to unavailability of data. To get the rich panel, the time series data was constructed for each of the product involved in these cases.

The trade data i.e. import value (in US dollar) and import quantity has been compiled from COMTRADE database constructed by the United Nations Conference on Trade and Development (UNCTAD). The import data have been compiled at 6 digit HS product classifications for the period of 1999 to 2014 so as we get a window of four years before (t-4) and after (t+4) the initiation of the case. The year of initiation of the case has been set as the base year t_0 .

So, now we have a pool of 142 items involved in 95 cases. In the pool, eight cases (15 items) were not affirmative in the final outcome and 87 cases (127 items) were affirmative and so the final antidumping duty was imposed on them, which was ad valorem duty.

The trade effects are assessed for import value, import quantity and unit value separately. The unit values series is obtained by dividing import value by the import quantity. There is a problem of measuring trade effects of antidumping actions based on annual trade data because it correspond to calendar years and not to the actual period of the investigation¹. We have tried to analyze the trade effects by various groups of industries and group of countries. Following tables provide basic information about the clusters and frequency of the observations.

Country	Frequency of obs.	Percent	Items
China	538	40.85	58
E U	190	14.43	20
Korea	135	10.25	15
U S	124	9.42	14
Japan	106	8.05	11
Thailand	91	6.91	10
Indonesia	74	5.62	8
Malaysia	59	4.48	6
Total	1317	100	142

Source: Author's calculations are based on the sample data explained in the previous section

¹ The annual trade data follows the calendar period, whereas the AD case could be initiated at any point in time during the calendar year.

Table 1.4: Frequency distribution of observations by Level of Development			
Groups	Frequency of obs.	Percent	Items
Emerging	762	57.86	82
Developed	555	42.14	60

Source: Author's calculations are based on the sample data explained in the previous section

Table 1.4 : Classification of commodities based on their use		
Group of Commodities	Frequency of obs.	per cent
Intermediate	927	70
Capital	243	18
Basic	147	11
Total	1317	100

Source: Author's calculations are based on the sample data explained in the previous section

Table 1.6 : Classification by HS based industries		
HS based Groups commodities	Frequency of obs.	per cent
Chemicals	626	47.53
Machines	218	16.55
Plastics	152	11.54
Base Metals	147	11.16
Textiles	90	6.83
Cement, Ceramic, Glass	34	2.58
Vehicles other than railways and trams etc.	25	1.9
Minerals	16	1.21
Papers	9	0.68
Total	1317	100

Source: Author's calculations are based on the sample data explained in the previous section

1.9 Econometric model specifications

As explained above, the dataset used for the econometric analysis is a pooled data of 95 antidumping cases initiated in the period 2003-2014 by Indian authorities. The data has been truncated so as to get minimum of nine annual observations for each investigation, four years before the initiation, the year of initiation itself, and four years after the year of initiation. This has allowed to estimate trade effects of both duty imposition and initiation of investigation on dependent variables, i.e., import value, import quantity and unit value of imports from both named and non-named countries.

Since the data constructed for the analysis is a dynamic panel, the dynamic panel data model proposed by Arellano and Bond has been considered. Considering all the econometric problems that may be faced in the use of Fixed Effect and Random effect models, Arellano and Bond has proposed the two step system generalized method of moment (GMM) instrumental panel estimator. To capture the lag effect of AD policy, the model has considered lagged values of the dependent variables in all the three cases i.e. import value, import quantity and unit value of imports. Three separate models have been estimated for three dependent variables. The estimated equations could be expressed in the following general form:

$$y_{it} = \alpha_1 y_{i,t-1} + \alpha_2 y_{i,t-2} + x'_{it} \beta + u_{it} \quad \text{-----(1)}$$

Here, y_{it} is the dependent variable and it takes three different variables (i.e. import value, quantity and unit value) in three distinct models. In all the three models $y_{i,t-1}$ and $y_{i,t-2}$ are the lagged values of the dependent variable. The α_1 and α_2 are scalars and β is a $K \times 1$ vector. The x'_{it} is the $1 \times K$ vector of explanatory variables. The year dummies (i.year) have been incorporated in the model as a control variable for de-trending. It is assumed that the error u_{it} , follows one-way error component model as follow.

$$u_{it} = \mu_i + v_{it} \quad \text{-----(2)}$$

Where, $\mu_i \sim \text{i.i.d.}(0, \sigma_\mu^2)$ and $v_{it} \sim \text{i.i.d.}(0, \sigma_v^2)$ are independent of each other and among themselves. The cross-section is identified by the case ID and the time-series by the annual observations on import trade before and after the AD initiation i.e. initiation year.

Since y_{it} is a function of μ_i , the lagged dependent variable $y_{i,t-1}$ is also a function of μ_i . And therefore, $y_{i,t-1}$ a right hand regressor in above equation is correlated with the error term. This makes the ordinary least squares (OLS) estimator biased and inconsistent even if the v_{it} are serially uncorrelated. The standard way of estimating above type of equation via the fixed-effects (FE) estimator eliminates μ_i , but the FE estimators will be biased and potential inconsistent since $y_{i,t-1}$ will be correlated with the FE-transformed residual by construction. A similar problem exists for the second lag ($y_{i,t-2}$) of the dependent variable.

Arellano and Bond (1993) put forward a two –step GMM estimator that gives consistent estimates, assuming there is no second order serial correlation among the errors. To obtain consistent estimate of α_1 , α_2 and β , we can take a first difference of above equation to eliminate the individual country-specific effect μ_i which gives the following equation:

$$y_{it} - y_{i,t-1} = \alpha_1(y_{i,t-1} - y_{i,t-2}) + \alpha_2(y_{i,t-2} - y_{i,t-3}) + (x'_{it} - x'_{it-1})\beta + (v_{it} - v_{it-1}) \quad (3)$$

The model suffers, by construction from the correlation between the $y_{i,t-1}$ and $y_{i,t-2}$ and the transformed residuals ($v_{it} - v_{it-1}$), consequently we must estimate the transformed equation with instrumental variable. There are multiple moment conditions that can be exploited to derive instruments. For all time periods, both $y_{i,t-3}$ and lagged values of x'_{it} are valid instruments. Arellano and Bond (1991) argue that additional instruments can be obtained if one utilizes the orthogonality

conditions that exist between lagged values of y_{it} and the disturbances v_{it} (Ganguli 2008).

Arellano and Bond (1991) proposed a test for the null hypothesis of no second-order serial correlation between the errors of the first-differenced equation. The importance of this test arises because the consistency of the GMM estimator relies on the condition that $E[\Delta v_{it}, \Delta v_{it-1}] = 0$. This hypothesis is true if the v_{it} are not serially correlated or follow a random walk. Under the latter situation, both OLS and GMM of the first-differenced version of (1) are consistent and Arellano and Bond (1991) suggest a Hausman-type test based on the difference between the two estimators. Additionally, they suggest Sargan's (1958) test of over-identifying restrictions. However, a "robust" version of the Arellano–Bond test has been used and that assumes heteroskedastic errors, and hence do not report the Sargan test statistic.

The Fundamental model Specifications used for the estimations is as follow

$$\ln x'_{it} = \alpha_1 \ln y_{i,t-1} + \alpha_2 \ln y_{i,t-2} + \alpha_3 d_{ini} + \alpha_4 d1_{ini} + \alpha_5 d1_{aduty} + \alpha_6 d2_{aduty} + \alpha_7 d3_{aduty} + \alpha_8 d4_{aduty} + \alpha_9 i.year + \varepsilon_{it}$$

The dependent variable $\ln x'_{it}$ takes three different values in the three different models i.e. the log of imports value, the log of quantity and the log of unit value in respective models for case i at time tk ($k = 0, 1, \dots, 5$). The time has been normalized in such a way that the dummy d_ini refers to the period of the initiation of the case and $d1_ini$ to the period of investigation which is the first year after initiation, while dummies $d1_aduty$, $d2_aduty$, $d3_aduty$ and $d4_aduty$ refer to the years following the outcome of the case (after the duty imposition) and assumes value 1 for that particular year and 0 otherwise. Theoretically, we expect to obtain negative effects of antidumping policy on the import of commodity i from the named countries and a positive effect unnamed countries (implying the incidence of *trade diversion* from named country to the unnamed countries). The explanatory variables on the right-hand side of above equation include the two immediate lags of the value of the dependent variable prior to the

initiation of the case, in period $t-1$ and $t-2$, respectively. The reason for inclusion of these lags as independent variable is to control for the size effects of initial imports and to capture the progress of imports prior to an antidumping initiation. To capture the duty effects, interaction dummy of actual duty has been incorporated in the model. These terms capture the staggered effect of the duty in the years following the initiation of a case. Thus, for example, for each case i , the term $(d1_duty*ln_f_ad_duty)$ equals the value of the duty if the year is $t = 1$, while it is zero in all other years. Finally, we include calendar year dummies (*I. Year*) in the estimation to control for macroeconomic trends. This could be relevant if firms are more likely to file a petition during recessions, when dumping and injury are more likely to be demonstrated.

Separate equations are estimated for Import value, quantity and unit value, named and unnamed countries, emerging and developed countries and also for the different groups of cases as used based classification i.e. consumer good, intermediate goods, basic goods and capital goods and HS classification based industries such as base-metals, papers, chemicals and plastics, textiles and minerals etc. The variable d_ini is a dummy that takes the value of 1 for the year of initiation for each case. This variable tests for the harassment effect of antidumping investigations.

1.9 Chapter Scheme

The thesis has been arranged in seven chapters as given bellow:

Chapter 1: Introduction

Chapter 2: Review of Literature

Chapter 3: Antidumping Proliferation: Trends and Patterns

Chapter 4: National AD legislations: Critical Survey of DSB Rulings.

Chapter 5: Overall and industry specific trade effects of Indian AD Policy

Chapter 6: Trade effects on named and unnamed countries and trade diversion effect.

Chapter 7: Summary, Conclusion and Policy recommendations.

Bibliography, Appendix I, Appendix II

1.10 Research Limitations

The major limitation of the study on antidumping is the lack of reliable and open source data. The other major limitation is the time lag in the data. The antidumping duties are imposed throughout the year but the trade data is available only for the year which is different from the calendar year. Many countries do not share the data pertaining to the dumping calculations. So it is difficult to compare the methodological issues involved in the calculations of dumping margins, normal value constructions and injury margins. The multiple time observations on different types of Nontariff Barriers are to be analyzed to understand the dynamic nature of the policy instrument to protect infant industries from unfair trade practices.

Chapter - II

Review of Literature

2.1 Introduction

The chapter has been divided into three sections. Section I deals with the economic theories of dumping and antidumping. Section II discusses the theoretical studies and section III deals with the empirical studies. The anti-dumping policy is being debated and has become a central issue in trade policy research in recent decade, particularly in the post WTO. Researchers all over the world have been carried out lot of research in this field and a lot remains to be done. There is a lot of scope to work on how anti-dumping measures affect the countries imposing these measures, specifically developing countries like India, China, Brazil and Argentina. There are several studies available on the issue of dumping and antidumping. The first comprehensive study on the issue was done by Jacob Viner in 1921. After that many people have worked on this issue. Most of the early studies are of theoretical and legal nature. The empirical studies are mostly available since late eighties. The empirical studies have estimated the trade effects of antidumping on imports and even bilateral trade. Some studies have also estimated the welfare losses and the cost of dumping for the country as whole. US trade commission has calculated the trade effects using sophisticated computing models such as CGE and econometric tools. Let us first have a look at the economic theories of dumping and antidumping.

2.2 Theories of Dumping and Antidumping

The concept of dumping is routinely used and understood as the international price discrimination i.e. selling goods at lower prices than the domestic market price. But the merely charging lower price does not suffice to be dumping. Dumping is charging unfair or abnormally low prices abroad. The concept of dumping has changed over period of time. The antidumping agreement of the WTO defines dumping as ‘the exporting a good or introducing a product into the commerce of other country at a lower price than the domestic price of the product in ordinary course of trade and in case of insufficient domestic sales it is compared with ‘normal value’.

This type of behavior seems to be quite different from the behavior under the perfectly competitive market. A perfectly competitive firm would choose to sell all of its output in

the market where it can fetch higher price. But the patterns of behavior of a monopolist are completely different from the perfect competition. A monopolist has power to charge different prices in different markets as long as the equilibrium condition is achieved (MR=MC). But this may be injurious to the firms producing similar goods in the importing country and, therefore, dumping with a causal link with the injury to the domestic firms has been condemned by the WTO laws. Antidumping laws seek to eliminate these practices. If the targeted firms fail to increase prices or to reduce sales, the imposition of antidumping duties brings correction in the price distortions.

There are several theories and approaches that have tried to explain this type of behavior by firms. This section briefly reviews of literature on the theoretical aspects of dumping and antidumping.

2.2.1 Price Discrimination in the Segmented Markets

The classical theory of dumping was put forward by Jacob Viner (1923). According to him dumping arises from price discrimination across monopolized segmented markets featuring higher demand elasticity in the export market than in the domestic market.

A monopolist can charge different prices for the same product in different markets with different elasticities. He has incentives to charge higher price in the market where the demand is inelastic and charge lower prices where it is elastic demand. A discriminating monopolist determines prices and allocates production to each markets according to the equilibrium condition i.e MR= MC. This optimization condition implies that the monopoly price in market i , p_i , is closer to marginal cost c the higher the elasticity of product demand $\epsilon = -[dq_i/dp_i][p_i/q_i]$

$$\frac{p_i - c}{p_i} = \frac{1}{\epsilon_i}$$

Therefore, if demand abroad is more elastic than home country demand, a price discriminating monopolist will charge a lower price in the export market than in the home market. This price discrimination policy is classed as dumping.

2.2.2. Local Monopoly and Competition Abroad

Dumping can arise from differences in demand elasticity's related to divergent market structures at home and abroad. Consider an exporter that holds a monopoly in the home market, say, sustained by protectionist measures or government-imposed restrictions to entry. If the local monopolist sells in competitive markets abroad it will be forced to charge a competitive price abroad. Dumping arises because, *ceteris paribus*, the competitive price will be lower than the monopoly price (Eichengreen and van der Ven, 1984).

2.2.3. Reciprocal Dumping

Multimarket oligopolistic interaction can induce countries to dump goods on each other. Two-way dumping of the same good can take place in two oligopolistic markets that are segmented on the demand side – so that the seller treat each country as a distinct market – but are interconnected through trade. Brader and Krugman (1983) show that exporters will have incentives to set low prices, net of transport costs, abroad. A setup in which mutual dumping takes place, known as the reciprocal dumping model or the cross – hauling model, is developed below.

What is the effect of market structure (i.e. the number of firms) on the propensity of firms to dump goods? Weinstein (1992) extends Brander and Krugman reciprocal dumping model to consider multiple firms in each of the two markets examined. He shows that firms operating in markets in which a large number of domestic rivals are more likely to dump unilaterally (i.e. only the firms from one country dump) than firms in less competitive markets.

Weinstein's result provides a counter example to the traditional notion that dumping is performed by firms operating in concentrated industries. The intuition is the following. Consider a given market supplied by several domestic firms and one foreign exporter. All firms are identical in terms of technologies. Because the exporter must incur production and transport costs, it bears higher costs than local firms. Now consider an exogenously given increase in the number of domestic firms. If the increase is large enough, the local price will fall below the sum of the exporter's production and

transport costs. If this condition holds, the foreign exporter cannot survive in the export market. Still, domestic producers will be able to dump goods abroad, (absorbing part of the transport costs).

Model symmetry implies that equilibrium price p and p^* must be the same. Therefore, the price received from sales abroad. This feature implies that the exporters fully absorb transport costs. In terms of trade jargon, the free on board (f.o.b) price for exports is below the domestic price. Recall that the f.o.b. price is export price net of transportation costs.

The reciprocal dumping equilibrium examined, involving two-way trade in identical products with the feature that exporters fully absorb transport costs, is surprising in several respects. First, reciprocal dumping does not arise from accidental cross-country differences in demand elasticity's - as in Viner's price discrimination theory of dumping - or from differences in cost functions across firms. In fact, the model is symmetric in demand and cost functions. Second, intra-industry trade (IIT) in identical products deriving from reciprocal dumping is not due to a demand for variety and must be distinguished from IIT in similar but not be identical products. Furthermore, the game's outcome involves the paradoxical generation of pure waste due to transport costs incurred by dumping products abroad while receiving identical products from abroad at a cost.

Reciprocal dumping arises for symmetric reasons related to oligopolistic behavior in segmented markets. Because each firm treats each country as a separate market, it determines profit - maximizing supplies to each country on the basis of a different duopoly game in each country. Market segmentation sustains an equilibrium in which marginal costs (gross of transport costs) and marginal revenues are higher in export markets than at home. If marginal costs side, but reciprocal dumping could still arise.

2.2.4. Entry Deterrence and Predatory Pricing

An entry deterrence strategy is to sell at a price below marginal cost in order to discourage potential rivalry. In open economies, this limited pricing strategy corresponds to dumping (derives and McGuinness, 1982).

Predatory pricing by a foreign firm seeking to force exit of an export market rival can be implemented through dumping in oligopolistic segmented markets. Predatory behavior is defined as charging a price below that which would prevail in the absence of an exit inducement strategy. Hartign (1994) develops a signaling dumping model with asymmetric information in which the export market rival must infer the exporter's cost through the latter's pricing behavior. Markets are segmented and the exporter is assumed to be a monopolist in its home market. In the first period of a two –period game, the foreign exporter sets a low exports price to signal that it is a low-cost competitor. Under appropriate conditions, the dumping strategy induces the exports market rival to exit in the second period.

2.2.5. Cyclical Dumping

In Ethier (1982b), dumping takes place as a response to cyclical fluctuations in demand. The model dispenses with the price discrimination rationale for dumping. Firms producing a homogeneous good interact in competitive markets and face price uncertainty coupled with inflexible labor contracts. In the presence of fixed costs, labor contracts and restrained layoffs, competitive firm facing a cyclical downturn at home find it optimal to sell abroad at a price falling below average total cost. As a result, trading partners are flooded with dumped goods. Firm engaging in dumping behavior during the cyclical downturn recover their profits by selling at prices above average costs during the upturn.

The rigidities imposed by excessive capacity in regression periods can provide arguments in favor of transitory dumping practices. Staiger and wolak (1992) develop a model with a competitive domestic practices market and a monopolized foreign market that is segmented by a prohibitive tariff, the foreign demand in its home market and chooses capacity before demand is observed. Installed capacity generates a production inflexibility that is partially overcome through dumping. The foreign monopolist dumps goods on world market when it experience excess capacity due to slack demand at home. Cyclical dumping arises from transitory excess capacity due to demand fluctuations in a monopolized market.

2.2.6. Firm Selection through Dumping

Industry selection through firm entry and exit can generate dumping in competitive markets in which individual firms are price takers. Clarida (1993) develops a Ricardian two sector, two-country, two period international trade model in which the number of firms is endogenous and countries differ only in their initial stock of technological knowledge. Unobserved differences in firms' initial stock of knowledge are enough to give rise to dumping.

Firms are viewed as equally productive *ex ante*, as measured by the Ricardian input-output ratio, but learning shows them to differ *ex post*. Following Jovanovic (1982), firms can only learn about their own productivities by entering the market as producers. High-cost firms exit the market forced by a competitive selection process in which prices fall below the average cost of the least efficient firms. This setup generates a process of entry, learning dumping, and exit of some technological newcomers (i.e. Shakeout).

In contrast to cyclical theories in which dumping takes place when demand declines, the firm selection framework can explain dumping in a situation in which there is an increase in the demand for the dumped products. A high level of demand (assumed to be invariant to entry and exit decisions) induces entry of firms seeking a share in the rents accruing to those that are found to be more efficient *ex post*. Sectorial outputs and countries' terms of trade are endogenous and dependent upon firms' entry and exit decisions. For dumping to take place in this setup, the two countries must not be identical. If they are identical, goods will be sold at prices below average cost—dumping will not arise.

2.2.7. Domino Dumping

Dumping can take place in anticipation of a future voluntary export restraint. If the negotiation of a voluntary export restraint (VER) is likely, and licenses to export are allocated in proportion to firms' market shares prior to the VER, it is optimal to engage in dumping. In forward-looking competitive export markets, exporters engage in dumping to increase current market share, and thus secure the option of receiving greater export licenses in the future.

The rationale for dumping when a negotiated export restriction is based on past exports is called domino dumping because it generates domino effects. Suppose that the possibility of future VRE leads to dumping, which in turn justifies the future VER and might increase its likelihood. The VER could then give rise to the prospect of an additional VER imposed by the home country of the affected firms, giving rise to anticipatory dumping there, and so on. This domino process describes an interrelated series of dumping actions in several markets or countries (Anderson, 1992, 1993).

2.2.8 Dumping Below Cost

Deardorff, A.V. (1989), has given alternative definitions of dumping. They are based on some type of cost such as average cost; marginal cost. This is possible only when the losses occurred from below cost sales is offset by the sales at higher cost elsewhere (Deardorff, 1989). He has provided two scenarios of below cost dumping i.e. dumping below average cost and dumping below marginal cost. Pricing below average cost is considered to be normal behavior for any firm as a short run strategy for surviving in a depressed market. Firms do not even have to be in the imperfectly competitive markets. Therefore, pricing below average cost could not be considered as illicit practice as the price discrimination. The one exception, on the other hand, explains sales below marginal cost essentially by mis-defining marginal cost. Other exceptions for sales below marginal cost are, Competition for Market Share, Predation Sales Maximization Short-Run Rigidities and Uncertainties

2.2.9 Welfare Effects of Reciprocal Dumping

The reciprocal dumping solution is not Pareto efficient. The reason is that it entails a degree of monopoly power as well as socially wasteful transportation costs incurred in cross transport. The welfare consequences of a move from autarky to trade with reciprocal dumping are ambiguous as there is a trade-off involving two effects working in opposite directions:

- 1) Trade generates wasteful transport costs due to cross hauling;

2) Trade introduces international competition that ameliorates the monopoly distortion under autarky and leads to lower prices.

Which effects dominate depends on the conditions giving rise to dumping. Rivera-Batiz and Oliva (2003) show that free trade with cross hauling might not be superior to autarky under monopoly conditions.

Reductions in Transport Costs

Consider a reduction of transport costs from a prohibitive level to a lower level that makes trade profitable. let the representative consumer's function be

$$U(Q) = u(Q) + k, \quad Q = q + x^*,$$

Where k is the numeric. The sum of the welfare of the two countries involved is given by (symmetry implies that $Q = Q^*$ and $x^* = x$)

$$W(Q, x; c, t, F, F^*) = 2[U(Q) - cQ - tx] - F - F^* + 2k,$$

Where $c + t = c/g$ and $t = c(1-g)g$ represents international transport costs per unit exported (rather than iceberg costs as previously represented by g).

What is the welfare change of the shift from autarky to free trade ? A slight change in transport costs alerts welfare by

$$dW = 2 \left[(p - c) \frac{dQ}{dt} - x - t \frac{dx}{dt} \right] dt,$$

where $dU/dQ = p$.

the previous equation illustrates three distinct effects from a reduction in transport costs ($dt < 0$). The first term indicates the welfare gain from the increase in consumption due to a reduction transport costs ($dt < 0$ and $dQ/dt < 0$). The gain is equal to the wedge between price and marginal costs times the increase in consumption due to a reduction in transport costs. The second term indicates the gain due to unit reduction in transport costs ($dt < 0$) applicable to the current level of imports $x^* = x$. the third term indicates the loss from the

increase in imports ($dt < 0$ and $dx/dt < 0$). This loss derives from the replacement of domestic production with imports that require transport costs.

The welfare effects of the shift from autarky towards free trade with dumping are unambiguous in two special cases:

- 1) If transport costs become negligible, there are gains from trade due to the procompetitive effect. In terms of the equations for the change in welfare, the third term representing the losses due to transport costs disappears because $t=0$.
- 2) If transport cost are reduce just below the prohibitive level, so that $p = c + t$, the decline in costs permits trade but reduces welfare. In this case, $x = 0$ initially and the equation for the welfare change becomes

$$dW = 2 \left[t \left(\frac{dq}{dt} + \frac{dx}{dt} \right) - t \frac{dx}{dt} \right] dt = 2t \frac{dq}{dt} dt,$$

where symmetry implies that $Q = q + x^* = q + x$. The welfare change due to a reduction of transport costs is negative because $dt < 0$ and $dq/dt > 0$, which implies that exports replace domestic production if transport costs go down.

If the transport costs reduction is small enough, welfare is greater under autarky than in the reciprocal dumping equilibrium. Trade opening causes losses because the increased in consumption is accomplished by the combination fall of domestic production and an increase in imports. An additional unit of imports does not add to social welfare because it is transport cost it generates. Therefore the net effect of opening is the replacement of domestic production with imports requiring transport costs, which entails a net social cost.

2.2.10 Trade Liberalization and Dumping

Does free trade with dumping improves upon an autarkic economy sheltering a local monopoly by means of prohibitive trade restriction? This comparison involves a tradeoff. Reciprocal dumping is pro-competitive relative to autarky because the price p under reciprocal dumping (i.e. $\sigma > 0$) is lower than the autarkic monopoly price p^M (i.e. $\sigma = 0$) Notice that the cross-hauling condition is equivalent to the condition that the monopoly price under autarky exceeds marginal costs under reciprocal dumping (Brander and Krugman)

In Brander and Krugman model with constant demand elasticity, $p = A Q^{-1/\epsilon}$, the shift from autarky supported by trade restrictions to free trade with reciprocal dumping can be shown to be welfare-improving. In this particular case, the pro-competitive effect of shifting from monopoly to duopoly and the associated expansion of consumption can be shown to dominate the wasteful transport costs (Rivera-Batiz and Oliva, 2003)

2.2.11 Anti-Dumping Policy

Antidumping policy addresses dumping as a form of price discrimination in segmented markets. An antidumping duty – or a price increase realized to avoid paying the duty – operates to eliminate the dumping margin, that is, the gap between the domestic price and the export price net of transport costs (Rivera-Batiz and Oliva, 2003).

This section focuses on formally defining what an antidumping policy is, examining its effect on firms and consumers, and modeling government incentives for applying antidumping policies.

a. Dumping Margin and Injury Margin

Rivera-Batiz and Oliva, (2003), stated that antidumping duties are set in relation to the dumping to the dumping margin indicating the price distortion due to unfair pricing. Margin are calculated as the difference between the local price and the fair or normal price of imports, which can be measured by the price charged by the exporter, exporter's marginal costs or exporter's average costs. Let us focus on the dumping margin measured in terms of prices. The dumping margin for good I, DM_i , is the difference between the exporter's home market price p_i^i and the price received in the export market j net of transport costs t, $p_i^i - t$,

$$DM_i = p_i^i - (p_i^j - t) > 0 \quad p_i^j < p_i^i + t.$$

An antidumping duty offers the dumping margin. It prevents an exporting firm from selling good i in market j for less than the price charged in its home market plus transport costs. The antidumping policy enforces the following inequality

$$P_i^j \geq p_i^i + t,$$

Where j represents the country facing dumping. In practice, firms can simply increase the price of their exports and avoid paying the duty.

The injury margin is used in Europe and Australia to set antidumping duties. The injury margin on good i , IM_i is defined as the amount by which it's in the export market, net of transport costs, undercuts the price p_j^j of the import-competing good

$$IM_i = p_j^j - (p_i^i - t) > 0 \quad p_i^i < p_j^j + t.$$

In a symmetric equilibrium, $p_i^i = p_j^j$ and the dumping and injury margin are equal.

b. Antidumping Duties vs. Price Undertakings

At first sight, would appear that antidumping duties should never be observed. Indeed, targeted firms have incentives to increase prices to avoid paying the duties. Why is it that negotiations for price increase often break down and firms end up paying antidumping duties and price undertakings. An undertaking is an agreement in which the targeted suppliers voluntarily agree to set a minimum price-give a price undertaking-or voluntarily agree to restrict exports-give a volume undertaking. Because protection rents arising from higher prices are appropriated by the exporter, price undertakings are 'softer' than the payment of antidumping duties to the importing country government.

Under complete information, disputing parties in a Cournot duopoly game can anticipate the result of the antidumping process. If the imposition of an antidumping duty is anticipated and firms face no constraint on setting prices, there are incentives to avoid the duty means of a price undertaking. However, this result can break down if agents lack perfect foresight about the final result of the investigation.

Consider the case in which duties can have only two levels, which we call high and low. Suppose that the firm being investigated for dumping knows whether or not it will be acquitted while its export market rival knowledge is limited to the probability of acquittal and non- acquittal. This information structure reflects a situation in which the firm being investigated knows its costs, home and export market prices and can thus anticipate the result of the investigation while its export market rival is not fully informed. If the investigated firm knows that it will not be acquitted, it has incentives to negotiate a price

increase and this price will be consistent with the expectations of the uninformed firm. If the informed firm knows that a zero duty would be set, however, that is larger than the zero duty resulting from the investigation. In this case, an antidumping duty might result (Rivera-Batiz and Oliva, 2003).

c. Modeling Antidumping Policy

Antidumping policies have three main effects. First, they benefit domestic firms because the foreign rival is forced to increase prices. Second, domestic consumers lose from the local and rival firms' price increases. Third, the rival's reaction to an antidumping duty is to increase its export price while reducing its home price. This price reaction benefits the exporting firm's home country consumers. In other words, a unilateral antidumping action has a positive externality on foreign countries that is not taken into account by the government formulating the policy. Recapping, unilateral antidumping hurts the consumers of the country imposing it while favoring local firms and foreign consumers.

Reciprocal antidumping policies might be welfare improving for the world as a whole because they eliminate price discrimination. They can improve the world's welfare because consumer's benefit (each country's policy favors foreign consumers and this effect can be dominant) and these benefits might outweigh the reductions in firm's profits (each policy hurts foreign firms to a greater extent than it benefits domestic firms). But governments limit themselves to comparing the benefit to local firms with the losses to home consumers. When the other country policy is taken as given, the net national benefit of antidumping law enforcement might be negative. Consequently, reciprocal antidumping will not arise in a non-cooperative equilibrium even if it would improve world welfare due to externalities conferred on foreign consumers (Rivera-Batiz and Oliva, 2003).

Anderson et al. (1995) develop a two-country model with two differentiated traded products and two firms, one in which country. Each firm is specialized in a different product and transport costs are symmetric. Welfare W is defined as consumers' indirect utility $V(pI, pII, Y)$, a function of goods prices and income Y , plus firm profits. If production costs are assumed to be zero, firm profits are equal to revenues and

$$\begin{aligned}
W &= V(p_I, p_{II}, Y) + p_I q_I + (p_I^* - t)x_I \\
&= V(p_I, p_{II}, Y) - p_I \frac{\partial V}{\partial p_I} - (p_{II} - t) \frac{\partial V}{\partial p_{II}},
\end{aligned}$$

Where q is the quantity sold domestically, x represents exports and p_I and p_I^* are domestic and export market prices. The second equality derives from symmetry-which implies that $p_I^* = p_{II}$ and $V = V^*$ - and Roy's rule with $\lambda = \frac{\partial V}{\partial Y} \approx 1$

$$q_I = -\frac{\partial V(p_I, p_{II}, Y)}{\partial p_I}, \quad x_I = -\frac{\partial V^*}{\partial p_I^*} = -\frac{\partial V(p_I, p_{II}, Y)}{\partial p_{II}}.$$

consider the quadratic indirect utility function

$$\begin{aligned}
V(p_I, p_{II}, Y) &= -\alpha(p_I + p_{II}) + \frac{\beta_I}{2}(p_I^2 + p_{II}^2) - \beta_{II} p_I p_{II} + Y \\
&= -2\alpha\bar{p} + (\beta_I - \beta_{II})\bar{p}^2 + \frac{\beta_I + \beta_{II}}{4}(p_I - p_{II})^2 + Y
\end{aligned}$$

Where $\bar{p} = (p_I + p_{II})/2$ is the average price, $\alpha, \beta_I, \beta_{II} > 0$, and $\beta_I - \beta_{II} > 0$. For the low enough price for which the quadratic indirect utility functions makes sense, welfare decline with the average Price and increases with the gap between the prices.

The demand and profit functions associated with previous indirect utility functions are obtained using Roy's identity

$$q_i = -\beta_I p_i + \beta_{II} p_j, \quad j \neq i, \quad \beta_I > \beta_{II}, \quad i, j \in \{I, II\},$$

Where demands do not depend on Y (residual income is spent on other goods) and

$$\begin{aligned}
\pi_i &= p_i q_i + (p_i - t)x_i \\
\pi_i &= p_i (\alpha - \beta_I p_i + \beta_{II} p_j) + (p_i - t)(\alpha - \beta_I p_i^* + \beta_{II} p_j^*)
\end{aligned}$$

The Bertrand price competition solution for the segmented markets case is

$$p_I = p_{II}^* = \frac{\alpha}{2\beta_I - \beta_{II}} + \frac{\beta_I \beta_{II}}{(2\beta_I - \beta_{II})(2\beta_I + \beta_{II})} t ,$$

$$p_{II} = p_I^* = \frac{\alpha}{2\beta_I - \beta_{II}} + \frac{2\beta_I^2}{(2\beta_I - \beta_{II})(2\beta_I + \beta_{II})} t$$

$$p_{II} - p_I = p_I^* - p_{II}^* = \frac{\beta_I}{2\beta_I + \beta_{II}} t < t .$$

In this setting, the average price of good I and imported good II is

$$\bar{p} = \frac{p_I + p_{II}}{2} = \frac{2\alpha + \beta_I t}{2(2\beta_I - \beta_{II})}$$

Can be shown to be the same under segmented and tried markets. The difference between segmented and tried markets is that tried markets entail a cost pass-on and imply

$$p_I^* = p_I + t = p_{II} = p_{II}^* + t ,$$

Where p_I^* and p_{II} carry transport costs while p_I and p_{II}^* do not, and

$$p_I^* = p_{II} < p_I + t = p_{II}^* + t$$

Holds in segmented markets because dumping implies a degree of transport cost absorption.

The welfare maximization condition is

$$\begin{aligned} \frac{dW}{dp_I} &= p_I \left(\frac{\partial^2 V}{\partial p_I \partial p_{II}} - \frac{\partial^2 V}{\partial p_I^2} \right) + (p_{II} - t) \left(\frac{\partial^2 V}{\partial p_{II}^2} - \frac{\partial^2 V}{\partial p_I \partial p_{II}} \right) \\ &= (\beta_I + \beta_{II})(p_{II} - t - p_I) . \end{aligned}$$

In order to maintain the average price \bar{p} constant, the condition $dp_I = -dp_{II}$ is imposed in the derivation. Because a reciprocal antidumping policy ties markets and enforces the equality $p_{II} = p_I + t$, overall welfare is maximized at the price resulting from that policy. In other words, overall welfare is higher with reciprocal antidumping policies imposing market integration than under market segmentation. The institution is that, at the optimum, product prices should reflect marginal social costs (Anderson et al., 1995).

Anderson, Schmitt, and Thisse show that welfare-maximizing governments acting non-cooperatively in deciding whether or not to impose an antidumping law prefer not to enforce antidumping law. This preference arises because dumping favors domestic consumers while antidumping hurts local consumers and diffuses the benefits among the local firm and foreign consumers. In other words, a unilateral antidumping policy would hurt local consumers and lower national welfare relative to free trade even if reciprocal antidumping would favor all consumers and raise world welfare. In this situation, there is a free-rider problem. Governments failing to enforce antidumping laws would prefer to free ride on the antidumping actions benefits the consumers of the passive country consumers (Anderson et al., 1995).

Recapping, in a non-cooperatively equilibrium the bilateral use of antidumping does not arise even if it would be welfare-improving because the increase in consumer welfare would outweigh the fall in firms' profits. Reciprocal antidumping would have to emerge as the result of a cooperative agreement. These welfare properties and equilibrium result can be shown to hold under both Bertrand and Cournot competition.

2.3 Contingent Protections

The contingent protection especially the antidumping protections has been debated and criticized by both the economists and legal experts. Many are of view that these antidumping provisions are designed to misuse. Bhagwati (1988), noted that 'the administered/contingent protection provisions are misused by protectionists smartly by providing the falls facts because the descriptions and characteristics of concepts like fair value are inherently vague and can be interpreted restrictively with bias against foreign exporters'.

Finger (1993) cleverly stated in his paper that "AD is the fox put in charge of the hen house". The fox is clever enough not only to eat the hens but also to convince the farmer that it is only way things ought to be. Studies by Dale (1980), Messerlin (1990), Finger (1993), McGee and Block (1997) and many others have concluded that the AD rules are highly biased and always practiced to favour the domestic producers. The GATT/WTO

code has undergone significant revisions every negotiating round. Individual countries, especially the US and EU, frequently amended their AD statutes, almost always to make AD protection easier to grant. Not only does AD law allow Politicians to offer politically preferred industries protection without blatantly violating GATT/ WTO Principles, but they can also tinker with the rules to broaden the scope and availability of AD protection (Blonigen and Prusa 2001).

Bown (2009), showed in his study that the member countries have become more active in using contingent protection measures, particularly in the wake of the global economic crisis. Probably, the governments have responded to domestic protectionist pressure by imposing import restrictions during global economic crisis, demonstrated by Evans and Sherlund (2006).

In a latest study of UNCTAD it has been found that 40 percent of the sample countries had experience of rapid expansion of export of manufactured goods, while half the sample, (mostly low income countries) had faced deindustrialization. Deindustrialization and slow growth of exports had been accompanied by vulnerability of manufacturing sector of the economy (Aggarwal, 2005).

WTO Appellate Body while dealing with the case number DS177 stated that,

“If the WTO laws were not to offer a safety valve for situations in which, following trade liberalization, imports increase so as to cause serious injury or the threat thereof to domestic industries, member could be deterred from entering into additional tariff concessions and from engaging in further trade liberalization. It is for this reason that the safeguard mechanism in article XIX has always been an integral part of the GATT¹”

Kempton (1999) notes that on the empirical level it has been shown that countries issuing laws liberalizing their trade often issue antidumping laws meaning that trade liberalization and antidumping laws go hand in hand.

¹ Paragraph 7.77, Panel Report WT/ DS177/R, WT/ DS 178/R 2000.

Zanardi (2006) stated in his study that India, Argentina, South Africa, Brazil, and Turkey are the most frequent worldwide users of antidumping with very high level of cases initiations sometime as the EU and the US, in terms of intensity. It is more troubling that developing countries has a disproportionate impact on other low-income countries and data collected for his study revealed that the developing countries target other developing countries in about 60 percent of their antidumping cases.

Veugelers and Vandebussche (1996) developed a theoretical model to show how anti-dumping policy in the EC can affect market structure by influencing the incentives for firms to collude. They concluded that anti-dumping policy in the EC can, under different circumstances have both a pro and anti-competitive effect. Several scholars have suggested that the withdrawal of an anti-dumping complaint is *per se* evidence that foreign and domestic firms have entered into a collusive agreement (Grimwade, 1996).

Finger (1993) was of the view that “antidumping is a threat to the liberal trading system that post world war western leadership struggled courageously and effectively to create”. It offers a legal means to destroy GATT system”. However, Homes (1997) supported the use of AD measures and indicated the use of antidumping measures wherever necessary. His argument was based on the principles of efficiency of the domestic firms and even the fairness to them. According to him that the domestic producer has a right to be protected against a foreign seller, especially when the foreign firms indulge in the unfair trade practices. And thus he justified the use of antidumping measures under certain conditions, in the absence of other tools. He said that the antidumping measures could be used in certain situations only such as, monopolistic predatory pricing, Strategic behaviour falling short of monopolistic predatory pricing, Price discrimination aimed at market entry, Cyclical price cutting and Behaviour of state trading enterprises not based on commercial considerations.

Howell and Ballentine (1997) argued that antidumping action/policy plays an important role in addressing the issue of differences exists across international markets in view of competition policy. His argued that an inefficient firm can fetch higher price in the domestic market, under some protection and may indulge in predatory pricing in a foreign market. This helps firms to optimum capacity utilization and reduces unit costs.

But domestic firms may not avail these advantageous abroad due to the high level of competition in the external markets.

Bhagwati (1988) has supported the use of antidumping laws but at the same time he cautioned the possibility of misuse of antidumping measures and recommended to strengthen the institutions so as to prevent misuse of antidumping provisions. Auboin and Laird (1997) have noted in their study that the antidumping duty has been used intensively and therefore has become a strategic protection instrument of European Union (EU) mostly against the developing country imports in order to protect domestic industries.

Hoekman and Macrolides (1998) are of the view that so far it has been a problem especially for those nations which are into importing products. It should be dealt with by mutual agreement and harmony and not with an enforcement of competition law. The paper argues that economic and empirical basis for this line of reasoning is questionable. It is important to distinguish between competition policies in general from competition law. Antitrust includes instruments that regulate pessimistic behavior of the firms which are a subset of competition policy. He talks about predation which is a standard economic rationale for antidumping. Predatory dumping arises when a foreign firm forces a domestic firm to exit the market by keeping low prices.

Deardorff and Stern (1987) say that contingent protection is an inefficient instrument to deal with the impact of foreign subsidies as it imposes higher costs on domestic producers without increasing the incentives of foreign government to change its ways. A lot of research has been done on the incentive effects of antidumping. Thus antidumping can have a greater impact in case of oligopostic competition (Hoekman, 1998).

Robert W. McGee (2008) has note that antidumping laws have been used as weapons of protectionism even when dumping has not occurred since the early twentieth century. US included one of its antidumping laws in the Revenue Act of 1916. Though highest numbers of cases have been initiated in the US, countries like Canada,

European Union and Australia were the primary initiators of antidumping actions until 1990s.

Determinants of Anti-Dumping

Finger (1981) found a strong negative relationship between the number of anti-dumping petitions filed in the US and import penetration. Finger, Hall and Nelson (1982) used a political economy approach to test for the role played by political factors in the determination of anti-dumping and found that the political factors play important role in the determinations. On the similar lines, Salvatore (1988) also found that the level of import penetration is inversely affected by the ratio of successful anti-dumping petitions filed and positively affected by the overvaluation of the US dollar and degree of openness of the US economy (Grimwade, 1996).

Knetter and Prusa (2003) found that the appreciation of the real exchange rate and fall in the real GDP affects the filing antidumping petitions and both of these factors raises the degree of import competition faced by domestic producers. Similarly, Irwin (2005) found that the numbers of anti-dumping cases were strongly affected by a country's unemployment rate as well as by the exchange rate. The ratio of imports to GDP and the average tariff also affected the number of anti-dumping cases, suggesting that anti-dumping increased with the degree of import penetration. Finally, legal and administrative changes also played an influential role (Grimwade, 1996).

Pangariya and Gupta (1998) made an attempt to model the choice between antidumping duties and price undertakings². They found that protection rents arising from higher prices are appropriated by the exporter and therefore price undertakings are 'softer' than the payment of antidumping duties to the importing country government.

Anderson et al. (1995) have developed a two country model with two firms, one in each country, and two differentiated products being traded where each firm specializes in a different product and transport costs are symmetric. They found that government who

² An undertaking is agreements in which the targeted suppliers' voluntarily agree to set a minimum price-give a price undertaking or voluntarily agree to restrict exports-give a volume undertakings.

seek welfare-maximization acts non-cooperatively and prefer not to enforce antidumping laws because AD impositions hurt domestic consumers and importing industries. Consequently, the country as whole suffers gross welfare loss.

Stegemann (1989) focused on price undertakings entered into as a consequence of an anti-dumping investigation in the EC. He argued that such price undertakings would otherwise be illegal under the competition rules of the EC.

2.4 Empirical Studies on Trade Effects of Antidumping Investigations

There have been several attempts to study the trade effects of antidumping measures. The Lichtenberg and Tan (1994) were probably the first to study them in United States. They estimated AD effects on aggregate imports i.e. the import from all the countries and found that the AD measures reduces the imports. But their study neglected trade diversion, the most important dimension of antidumping measure.

Messerlin (1990) made one of the first studies to demonstrate the connection between anti-dumping and collusive behaviour. Based on a case study of the EC chemical industry, he demonstrated that firms used anti-dumping law to enforce cartel agreements, which are illegal in the EC and which were later uncovered by the competition authorities. However, the profits made by the firms from anti-dumping more than offset the fines that they were eventually forced to pay.

Staiger and Wolak (1994) studied this phenomenon extensively. They used disaggregated data and investigated the initiation effect, suspension effect and withdrawal effect of AD investigation on imports and domestic production for AD initiations in US from 1980 to 1985. They found substantial initiation effects on the imports from subject countries. But they did not find any withdrawal effects. However they found evidence of import diversion.

Krupp and Pollard (1996) studied the trade effects of AD initiations in the Chemical industry of US from 1976 to 1988. They found a significant drop in import quantity of during initiation period.

Prusa (1997) found that the protection offered by AD law significantly offsets imports from named country and so gets diverted to unnamed countries. Prusa (2001) in his later

study covered 700 cases filed in US between 1980 and 1994 and used product level data. He found strong evidence of significant trade destruction effects on imports from named countries, harassment effect and trade diversion effect to unnamed countries.

Konings et al. (2002) assessed the trade effects of 246 antidumping investigations initiated by the EU during 1985 to 1990. But they found no significant evidence of import diversion and so concluded that the AD policy was more effective in Europe than perhaps in the US.

Brenton (2001) found that AD measures in the EU reduce imports from targeted countries, and trade was diverted to other suppliers in the EU and to non-targeted suppliers in the rest of the world.

Bown and Crowley (2003) emphasize other possible impact of AD protection, which they call “trade deflection.” By this they mean that the countries subject to an AD investigation may shift their sales to other markets to make up for the lost market in the original importing country.

Egger and Nelson (2007) also provided empirical evidence suggesting that AD duties negatively affect trade volume and welfare, using a gravity model. Park (2009) empirically evaluated the effects of China’s AD measures on trade and demonstrated that AD protection has significant trade-depressing and trade-diverting effects.

Gunnar Niels (2003) has found evidence that antidumping measures in Mexico have significant trade destruction effects on both import volume and import value from the named countries. An affirmative outcome decreases import value from the named country (or countries) by 73 per cent on average, import volume decrease by 81 per cent and a price increase by per cent. He did not find any evidence of trade diversion.

Ganguli (2008) studied empirically the effect of Indian AD policy on trade flows from other countries for 285 AD petitions filed in India during 1992-2002. He has used product level import data at six digit HS codes. He demonstrated that imports from targeted countries fall significantly and it gets diverted to unnamed countries.

Aradhna Aggarwal (2010) has assessed the trade effects of anti-dumping (AD) duties levied on 177 (8-digit) products by India during the period 1994 to June 2001. She finds that the investigation effects of AD actions are not substantial. The imposition of AD duties restrains trade (both volume and value) and raises import prices. While trade

effects start dissipating in subsequent years, import prices from both named and unnamed countries rise significantly in the post-duty years. The developing trade partner countries suffer significant import losses when named. However, the trade destruction effect is insignificant for developed countries. Even though the unit value of their imports rises, there is no evidence of decline in trade from these countries.

Rutkowski (2006) found evidence that the withdrawal of anti-dumping cases in the EU was strongly related to a rise in import prices and a reduced volume of import, which suggests that collusion, did take place.

Konings, Vadenbussche and Springael (2001) found that there was relatively low import diversion in EU by using disaggregated data covering some 300 anti-dumping cases. The possible reason could be the lower level of duties that is imposed in the EU compared with the US. EU imposes measures on basis of injury margin and not the dumping margin which is the case in the US.

Baldwin and Steagall (1994) found in their study that imports penetration is a significant factor explaining US affirmative antidumping decisions. Antidumping cases-petitions and determination has significant trade effects by reducing the volume of imports, increasing their price or both.

Minsoo Lee et al. (2013) found that the antidumping measures have immediate effects on both import quantity and value. The imports from the PRC to US dropped significantly in the following years. Nevertheless, the trade restriction effects are short-lived. They also found that the restriction effect of AD measures for the above median cases is much more significant than for the cases with lower than the median, on the quantity and value of trade. The study also reports strong evidence of trade diversion from PRC to other countries, the US antidumping actions restrict the imports from the PRC but there is an increase of imports from other countries, which offset the trade remedy effects on domestic industries to a large extent. Miranda (1995) found some circumstantial evidence of trade diversion effects of antidumping measures in Mexico.

Prusa (1999) found evidence of strong trade destruction effects of US antidumping measures on imports from named countries. He has reported harassment effect and a trade diversion effect to non-named countries.

In a similar study, Konings et al (2001) assess the trade effects of 246 EU antidumping investigations initiated between 1985 and 1990. Using pooled regressions with nine annual observations per case (two years before initiation, the year of initiation, and six years after), the authors find no significant evidence of import diversion.

Lasagni (2000) concluded in a study covered EU cases for the period 1982–1992. These findings for the EU contrast with those of Brenton (2001) where he found statistically significant evidence that antidumping actions in the EU do result in trade diversion from named countries to non-named countries outside the EU.

Lloyd et al (1998) use an intervention analysis to assess the effect of a price undertaking on time series of import prices (unit values) and import volumes. Applying this to a 1982 EU antidumping actions against polypropylene film imports from Japan, and considering monthly data over a period of 12 years, the authors find that the undertaking was associated with a general increase in import prices and a fall in the import share of Japan in the product concerned. The effect on imports from non-named countries was not assessed.

Besedes and Prusa (2013) in a recent study examined the impact of AD on the ability of a named supplying country to maintain any market presence. They found that AD investigations often drive export suppliers entirely out of the market. Using U.S. AD case information along with highly disaggregated product-level quarterly export data they have estimated the hazard of exports to the U.S. ceasing and found that AD increases the likelihood of exit by more than fifty percent. They concluded that over the past two decades more than one-quarter of AD duties have exceeded 100% *ad valorem*. It may not be entirely surprising that many AD affected countries are unable to continue to export to the US (Besedes and Prusa, 2013).

The antidumping distorts the trade from the named countries and it gets replaced by increase in trade from unnamed countries. Trade diversion in EU's case is limited than the trade diversion in US. Vandebussche et al. (1999) found limited trade diversion caused by 246 antidumping cases initiated between 1985 and 1990.

III. Trade Effects of Indian Antidumping Policy

There are few studies on the trade effects of Indian AD policy. Ganguli (2008) studied empirically the effect of Indian AD policy on trade flows from other countries for 285 AD petitions filed in India during 1992-2002. He has used product level import data at six digit HS codes. He demonstrated that imports from targeted countries fall significantly and they get diverted to unnamed countries.

Aggarwal (2010) has assessed the trade effects of anti-dumping (AD) duties levied on 177 (8-digit) products by India during the period 1994 to June 2001. She finds that the investigation effects of AD actions are not substantial. The imposition of AD duties restrains trade (both volume and value) and raises import prices. While trade effects start dissipating in subsequent years, import prices from both named and unnamed countries rise significantly in the post-duty years. The developing trade partner countries suffer significant import losses when named. However, the trade destruction effect is insignificant for developed countries. Even though the unit value of their imports rises, there is no evidence of decline in trade from these countries (Aggarwal, 2010).

In a study of anti-dumping behaviour in India, Baruah (2007) found that it was neither increased pressure from imports nor the performance of domestic industry that were the significant factors but the evidence suggested that industries with a low degree of concentration were more likely to get protected. She also argued that the anti-dumping authority was sympathetic towards small producers which are more vulnerable to possible injury.

Singh, (2005) analyzed the impact of antidumping policy. The results show substantial impact on the quantity and the unit value of the investigated products. Empirical results show that decline in imports because of antidumping investigations may be higher than increase in output by other firms.

Bown and Tovar (2016) observed that 'products that subsequently sought antidumping protection in the early 2000s, on average, started with higher tariffs and received larger tariff cuts over the 1990s'. They also found the larger the good's initial tariff cut, the more antidumping and safeguards protection the Indian producers of that good

subsequently demanded and received ex -post.”; and India used new product-specific protection in the early 2000s to escape from 1990s trade liberalization announcements.

2.5 Research Gaps and the Contribution of the Study

Most of the earlier studies are about the US and EU’s experiences of the antidumping. There are very few studies for developing countries. As far as India is concern, they are even lesser and are dated now. The data used in those studies was only upto 2003. India has emerged as an economic power over the years and it is important to revisit the AD effects now. The earlier studies have focused on particular aspects of trade effects and have not adopted a comprehensive approach. Probably this is the first study that has explored both the duty and trade effects. Further it has also extended the analysis to the region-wise, industry-wise and commodity groups-wise trade effects. Similar exercise has been done for named and unnamed countries separately.

Chapter - III

Antidumping Proliferation: Trends and Patterns

3.1 Introduction

As discussed in the previous chapter the traditional measures of protectionism such as tariffs and quotas are increasingly not used after the formation of WTO and at the same time the use of the new protectionist measures such as antidumping duty, countervailing duty, VER etc. has become more common. Many WTO members cannot raise their tariffs since they are bound by it. Therefore, protectionist pressure is often seen through the rampant use of neo-protectionist measures under the label of contingent protection or 'WTO'-legal protection such as antidumping, anti-subsidy (CVD), and safeguard tariffs. Bown (2009) has observed the WTO member countries have become more active in using trade remedy measures, particularly in the wake of the global economic crisis. The Governments of these countries have responded to domestic protectionist pressures by imposing import restrictions during global economic crisis as shown by Evans and Sherlund (2006). After the inception of WTO, contingent protection has become a universal phenomenon with lot of WTO member countries adopting contingent protection laws. But antidumping is most rampantly used contingent protection. During 1995 to 2014, out of total three contingent protection measures used, the anti-dumping cases initiated accounted for 86.22 per cent. The share of CVD and safeguards remained as small as 6.8 per cent and 5.14 per cent respectively. Among the trilogy of trade remedy regimes- countervailing duty, safeguard measures and antidumping actions- antidumping actions are by far the remedy of choice. By the end of 1989, twenty eight countries had adopted antidumping laws. Nearly 1200 actions were initiated between July 1980 and June 1988. Four countries' actions accounted for 97.5% of all actions brought: 30% were brought by producers in the United States, 27% brought in Australia, 22% in Canada and 19% in EU. Since the early '80s, the number of countries that adopted an AD law has nearly doubled. While 37 countries had such laws in 1980, this number increased to 93 countries by the end of 2000 (Zanardi, 2004a). AD proliferation is most by among the developing countries. It does not seem to be confined to any particular region but includes developing countries from Asia, Latin America and Eastern

Europe (Vandenbussche and Zanardi 2009). But after the formation of the WTO in 1995 the use of antidumping has increased surprisingly. What is more, developing countries like India and China have overtaken the traditionally developed country users such as the EU and US as the largest users. This change leads to interesting questions, particularly with respect to the use of the antidumping instrument by large developing countries.

The first section of the chapter is about the brief history of genesis and evolution of antidumping regulations. The second part contains a comparative analysis of the trends and patterns in the initiation of anti-dumping investigations during 1995 - 2014. The third part elaborates trends in the imposition of anti-dumping measures by the top ten users during the same period. The fourth part deals with the sectors and countries most frequently targeted by anti-dumping measures. The last section deals with the analysis of Indian antidumping cases and overall Indian experience about antidumping

3.2 Evolution of AD

Dumping and antidumping have been a part of the rhetoric of political economy for a long time. Jacob Viner (1923) was the first scholar to organize the earlier writing on this issue. He mentions a sixteenth century English writer who wrote that the foreign suppliers were selling paper at a loss to drive out the infant paper industry in England. Viner also noted that in the seventeenth century the Dutch were accused of selling in the Baltic regions at ruinously low prices in order to drive out French merchants. Similarly, Alexander Hamilton, in his *Report on Manufactures* of 1791, also noted similar instances of dumping in America.

Though we find many instances of dumping in history, the anti-dumping laws were developed in the early part of the twentieth century. The world's first antidumping law was enacted by Canada in 1904. The Canadian government passed the tariff legislation to protect domestic manufactures from foreign competition. This was the first antidumping law in the history of antidumping. The provisions that were adopted as an AD law were actually in the form of amendments to Customs Tariff Act 1897.

Soon after the Canada, in 1905, the New Zealand government introduced the AD laws. It was a response to the peculiar problem faced by it. New Zealand and UK manufacturers of farm implements complained that a U.S. trust was attempting to monopolize the New Zealand market by price cutting. At the same time, New Zealand

farmers insisted that farm implement should remain duty-free, and they opposed other government actions that would increase their costs.

The government was looking for a way to balance the equipment manufacturers (by not protecting them) on the one hand and offending farmers on the other by not pushing up the cost of equipment. The New Zealand law established a commission to investigate complaints of unfair competition. On its recommendations, customs officials were empowered to provide subsidies to New Zealand and British manufacturers to match the "unfair" exporters' price cuts.

While the Canadian and New Zealand antidumping laws were generic responses to specific problems (steel rails in Canada and farm equipment in New Zealand). Australian regulation of 1906 was a generic response to a generic problem. Antidumping regulations were a section of law aimed at the general problem of controlling monopoly. The law was never applied because it was too complicated. Within a few years of the passage of antidumping laws in Canada, Australia, and New Zealand, such laws were also passed in South Africa and Newfoundland. After that, no new antidumping law was passed until 1921. The British government then passed an antidumping law that was even more complicated than the unworkable Australian regulation. Action against imports would come only after nine steps had been taken. The US Government also passed a similar law in 1921 to protect its domestic producers from Germany's dumping.

The United States and United Kingdom were not the only countries that passed antidumping laws in 1921. In that year, Australia, New Zealand, and Canada also passed new antidumping laws or made significant amendments in old ones. Dumping was not a new issue, however, so the explanation of why the time was ripe for enactment of antidumping laws was owing to several other factors.

After various countries adopted the legislation on antidumping, multilateral initiatives commenced and a collective agreement was finally achieved through GATT after 1947. Much of the history of the GATT negotiations is in fact the history of negotiating a charter for an international trade organization. The GATT began as a provisional agreement to implement the first set of tariff reductions. The expectation at the time was that the international trade organization would eventually be the institutional framework for coordinating national trade policies, just as the International Monetary Fund is for monetary policies. When the international community could not agree to establish the international trade organization, the

GATT became, by default, the framework for international coordination of trade policies.

In the course of negotiations at this multilateral forum, the contracting parties envisaged an elaborate plan for trade liberalization and undertook to facilitate further reduction of trade distorting practices in future rounds. The United States insisted that the trade remedies should be included in the agreement. Due to its insistence GATT incorporated basic conditions for adopting antidumping measures and thus AD regulations became an international law. The US AD regulations of 1921 formed the foundation for Article VI of the GATT (Irwing 2005). Through GATT's first two decades antidumping was a major instrument of policy only in Australia, Canada, and South Africa. Though the GATT came into force in 1948, the contracting parties (as GATT member countries are called) did not canvass about the use of antidumping until 1958. The resulting tally showed a total of thirty-seven antidumping decrees in force across all GATT member countries as of May 1958. Out of that twenty-two were in South Africa (GATT 1958, 14). Antidumping first became a significant GATT issue at the Kennedy Round of 1964-67. Its result was an agreement on the implementation of article VI (the antidumping code) which laid out detailed criteria and procedures for the invocation of antidumping action. Signatories to the antidumping code in 1967 committed themselves to ensuring that their domestic trade legislation was rendered consistent with the code. Its main revisions were related to causality and injury determination, which were addressed in 1979 code (Tokyo Round). This code allowed for "normal value" (the generic term in the GATT for home-market price) to be determined on some basis other than market price in the exporting country when there are no sales of the like products in the ordinary course of trade. Still the 1979 code contained many problems and led to inconsistent antidumping practices and procedures throughout the world. Therefore, the antidumping code needed revision. It received attention in the recent Uruguay rounds of negotiations. The table below gives the detailed chronology of GATT/WTO rounds.

Table 3.1 : GATT/WTO Trade Negotiation Rounds			
Years	Place/Name	Subjects covered	Number of countries
1947	Geneva	Tariffs	23
1949	Annecy	Tariffs	13
1951	Torquay	Tariffs	38
1956	Geneva	Tariffs	26
1960-61	Geneva (Dillon Round)	Tariffs	26
1964-67	Geneva (Kennedy Round)	Tariffs and antidumping measures	62
1973-79	Geneva (Tokyo Round)	Tariffs, non-tariff measures, “framework”	102
1986-94	Geneva (Uruguay Round)	Tariffs, non-tariff measures, rules, services, intellectual property, dispute settlement, textiles, agriculture, creation of WTO	123
2002	Doha Round	All goods and services, tariffs, non- tariff measures, antidumping and subsidies, regional trade agreements, IPR, environment, dispute settlement	144
Source: www.wto.org			

The table shows that the earlier GATT negotiations focused on further tariff reductions and AD remained a minor trade instrument in the GATT framework. AD measures received an attention in the Kennedy Round (1964-67). It was the first serious attempt to negotiate an ADA. It produced a code on multilateral rules for antidumping. After it antidumping regulations were discussed in Tokyo Round (1973-79). It attempted to reform non-tariff barriers system. The major amendment introduced was the removal of the principal cause test, article 3(a) of Kennedy Round/ Tokyo Round negotiation. As far as dumping is concerned, there were no significant improvements made in it.

3.3 Tariff Reduction and Proliferation of Contingent Protection Measures

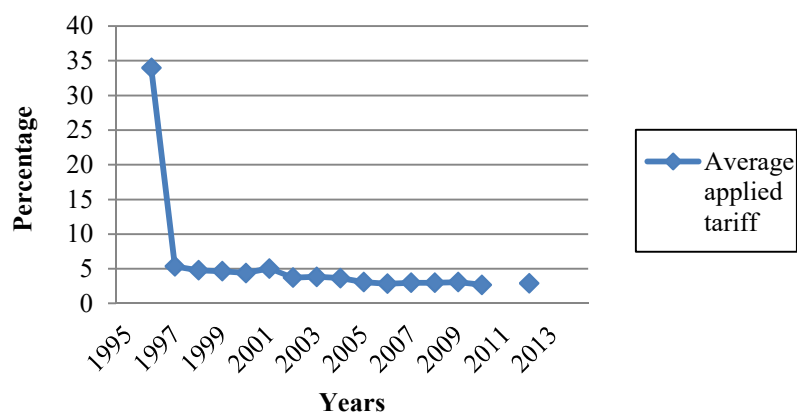
We know that the Tariffs have been reduced to very low levels after several GATT rounds of negotiations during first three decades of its existence. In the fifties to seventies the world trade grew faster than the world income and the export market was dominated by industrialized countries. As a part of multilateral negotiations, negotiating members were committed to tariff reduction and, therefore, it was not

possible to grant protection in the form of tariffs. This could be the reason for increasing use of the administered protection or contingent protection like countervailing duties (CVDs), anti-dumping duties (ADD) and negotiations for voluntary export restraints (VER). Developed countries initiated more and more anti-dumping cases against their trading partners. But some countries were using it heavily such as US, EU and Canada and actions by US became a bone of contention between US, EU and Japan. Auboin and Laird (1997) point out how anti-dumping duty has become a key defence instrument of EU against developing country imports in order to protect EU industries.

The voluntary export restraints (VER) declined in the post Tokyo Round of negotiations which may be due to a significant rise in the use of 'GATT-consistent' contingent protection measures. It was primarily because of antidumping measures that surged sharply, the use of safeguard measures did not change noticeably (Aggarwal 2003). The EC and US had been the largest users of grey-area measures until 1970s. They became the largest antidumping users since 1980. It's clear that these measures were replaced by the use of antidumping measures and it became a popular measure followed by countervailing measures. Safeguard measures, on the other hand, were used very rarely (A study by National Board of Trade, Sweden 2004).

The surge of contingent protection measures is also attributed to tariff reduction which was an important issue during the process of multilateral trade negotiations which have forced WTO members to reduce the tariff and other quantitative restrictions on trade. This has resulted in a sharp decline in the average applied tariffs among the WTO members. The use of contingent protection measures continued to increase in the post-WTO period. Surprisingly, there was a surge in the use of contingent protection measures, especially AD measures after the formation of WTO. The average applied tariffs have declined from 35% in 1995 to 3% in 2013 (figure1).

Figure 3.1 : Average Applied Tariff-World



Source : <http://data.worldbank.org/>

Table 3.2 : Initiations of Contingent Protection 1995-2014

Year	CV	AD	SG	Total
1995	10	157	2	169
1996	7	226	5	238
1997	16	246	3	265
1998	25	264	10	299
1999	41	359	15	415
2000	18	296	25	339
2001	27	372	12	411
2002	9	311	34	354
2003	15	234	15	264
2004	8	220	14	242
2005	6	200	7	213
2006	8	203	13	224
2007	11	165	8	184
2008	16	218	10	244
2009	28	217	25	270
2010	9	173	20	202
2011	25	165	12	202
2012	23	208	24	255
2013	33	287	18	338
2014	45	236	23	304
Total	380	4757	295	5432
Share	6.88%	86.22%	5.14%	100

Source: https://www.wto.org/english/tratop_e/adp_e/adp_e.htm

It is evident that the uses of contingent protections such as countervailing duty, antidumping duty and safeguard measures have amplified dramatically after 1995.

The table shows that initiations of contingent protection increased significantly from 169 in 1995 to 415 in 1999 which more than doubled. There is a slight decline in the initiations after 1999 till 2002 but after 2002 it declined even more due the decline in AD initiations. But the use of contingent protection measure is still high. Out of total contingent measures initiations, antidumping initiations account for 86% and countervailing duty and safeguards both together contribute only 14%. Table 3.2 depicts trends in the use of contingent protections by all the countries.

3.4 Trade (imports) Subject to Contingent Protections (Temporary Trade Barriers)

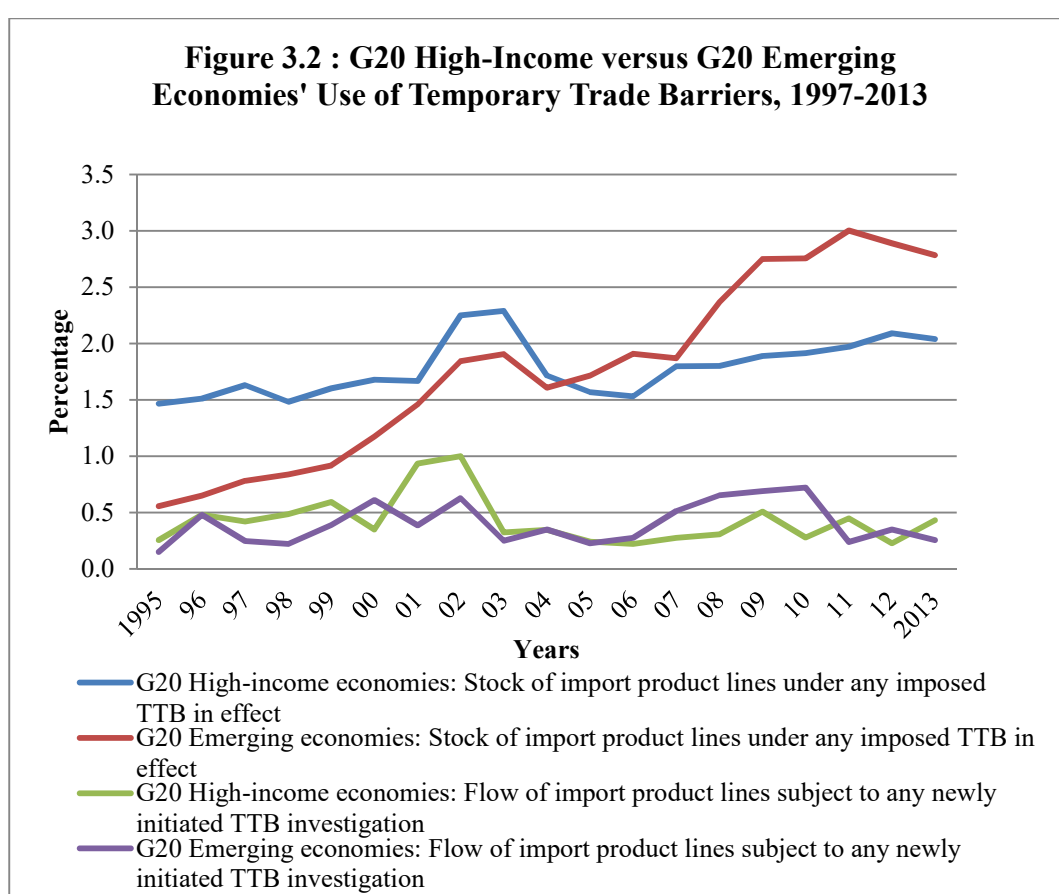
Major economies of the world trading system followed different approaches to liberalize trade during 1985–2014. Uruguay Round of during 1986-94 transformed the GATT into the WTO. The WTO members subsequently further liberalized their economies through the Doha Round (2002). Many countries also eased access to their domestic market for the partners through preferential trade agreements such as CUSFTA, NAFTA, SAFTA, ASEAN and European Union etc. Developing countries like India and China have reduced their average tariff levels after nineties.

There seems to be a great deal of correlation between the tariff reduction and the adoption of the contingent protections such as Antidumping, Countervailing Duty and Safeguard measures. Therefore, it is interesting to know that what amount of imports were subject to the contingent protection. Chad P. Bown (2010) has termed contingent protections measures as temporary trade barriers (TTB) in his study. We find a dichotomy in the present international trading framework, exporters are simultaneously subject to low average applied import tariffs, and they also face the threat of frequently changing TTBs. Chad P Bown (2010) has provided an empirically based set of facts on the cross-country use of TTB policies over 1990–2009 by taking stock of newly available, product-level data organized into the World Bank's Temporary Trade Barriers Database (Bown, 2010).

He has constructed two new measures of annual, product level 'stocks' and 'flows' of imported products subject to these TTBs to address some of the main shortcomings of previous research. He overcomes some of these difficulties by applying measures to new and detailed data drawn from the World Bank's Temporary Trade Barriers Database. As such, own study builds upon prior work documenting the global

proliferation of antidumping (AD) use in particular (Prusa, 2001; Zanardi, 2004; Bown, 2009).

He compared the use of TTBs by developed versus developing economy and showed the impact of these TTBs on the subjected imports of both the groups. He found that the stock of imported products subjects to TTBs of major emerging economies such as Argentina, Brazil, China, India and Turkey had grown considerably before the global crisis of 2008-09. However, developed economies such as the US and EU have experienced a declining share of their imports subject to such policies over time (Bown, 2010).



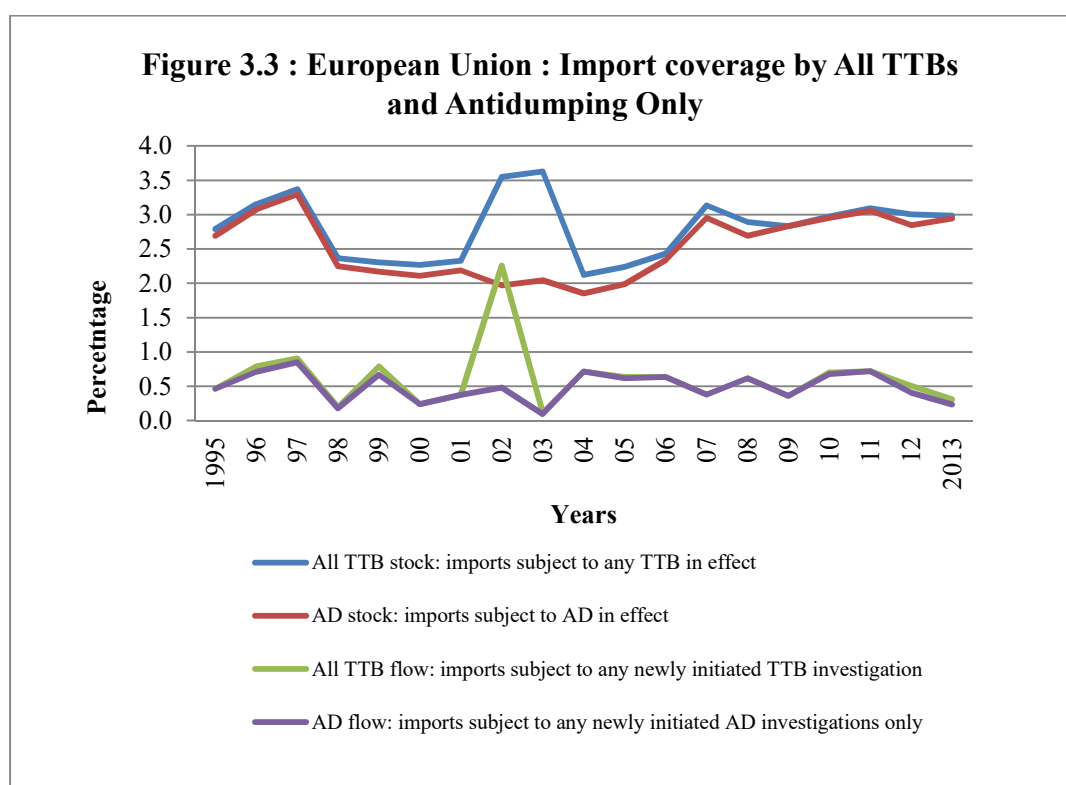
Source: World Bank's Temporary Trade Barriers Database (Bown, 2010a)

Bown (2010), found that the major G20 users have contributed to increase the stock of product lines subject to TTBs by 25 per cent during the crisis period. G20 economies increased the stock of products covered by TTBs roughly from 1.7 per cent in 2007 to 2.15 per cent in 2012. On the other hand, developing economies have increased their stock of product coverage by TTBs during the crisis by 40 per cent,

though there is a substantial heterogeneity within the set of developing economies (Bown, 2010).

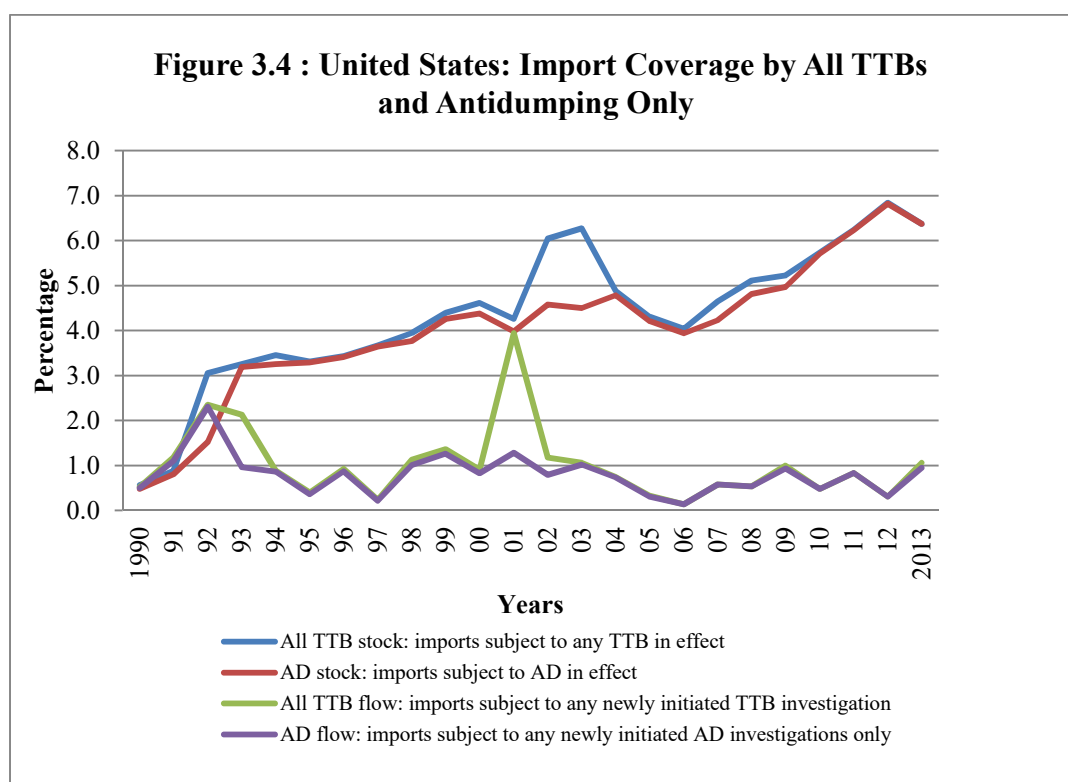
The G20 emerging economies have increased their stock of import product line substantially from 0.5 per cent to 3 per cent during 1995- 2013. There is evidence of significant heterogeneity of impact across affected exporting economies. The effect of the use of antidumping is increasingly on developing economy exporters like China. China is the largest single antidumping target of the AD users both developed and developing countries. Approximately, 2.6 per cent of China’s exported products to developing economies were subject to antidumping in 2009 and 1.6 per cent were subject to antidumping of developed countries. So the picture has changed from developed countries vs. developing countries to developing countries vs. developing countries.

The following figure 3.3 shows that EU imports subject to AD stock in effect have risen sharply from 2004 to 2011.



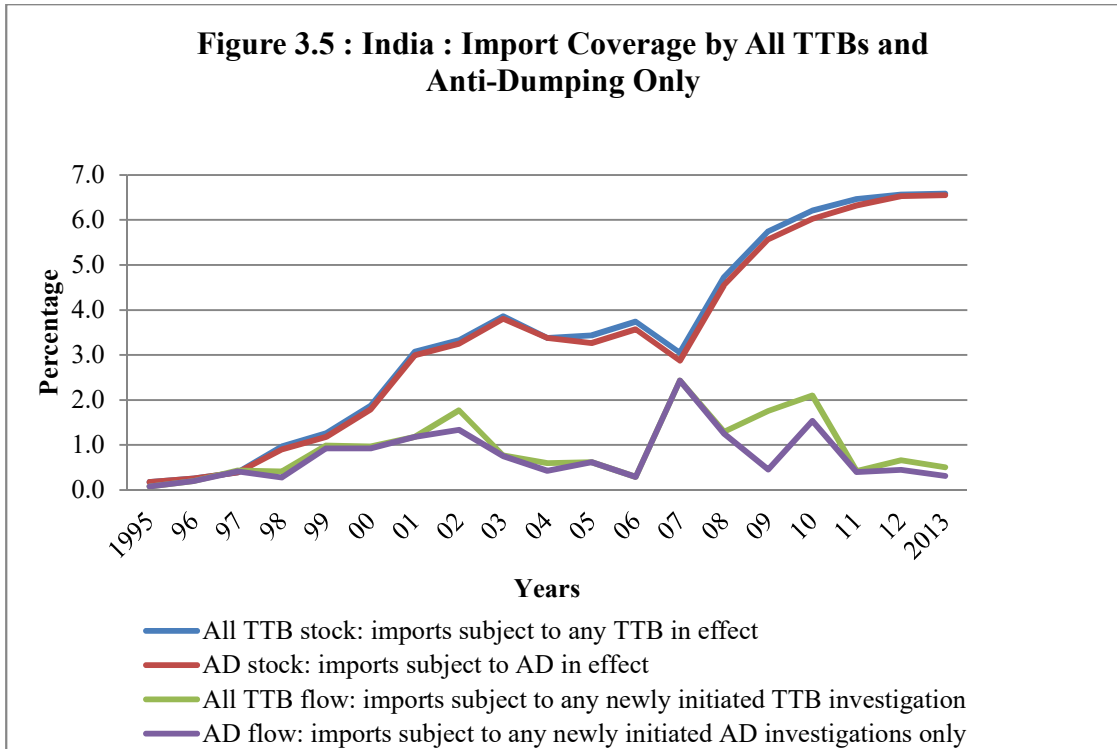
Source : World Bank’s Temporary Trade Barriers Database (Bown, 2010a)

As far as US is concerned, its import subjected to all TTB stock and even AD alone in effect has dramatically expanded from 4 per cent in 2006 to around 7 per cent in 2012. The import subject to CVDs and Safeguards is negligible so its AD measures that is being used by US as a contingent protection. But, as mentioned earlier, it may not be attributed to crisis alone because there is a trend effect in it. But if we see flow measures for imports subject to all TTBs, it has been between 0 to 1 per cent throughout (Bown, 2010).



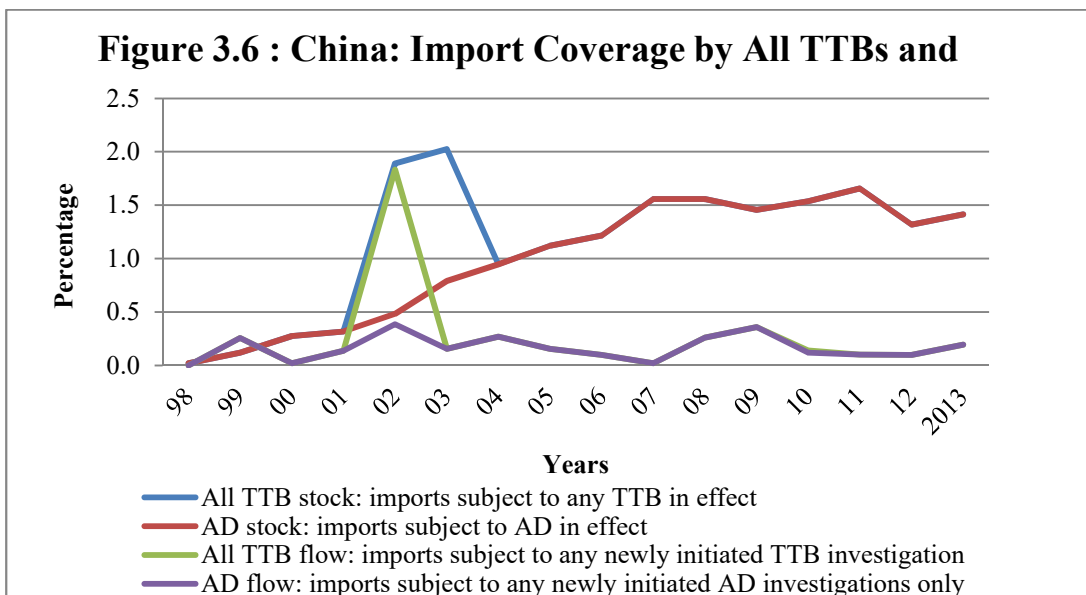
Source : World Bank’s Temporary Trade Barriers Database (Bown, 2010a)

It would be interesting to see the behaviour of TTB policy in India and China simply because India is the largest user of TTBs in the world and China is the most targeted country. Indian import stock subject to all TTBs/AD alone has increased abruptly from 3 per cent in 2007 to roughly 6.5 per cent in 2012. But imports flow subject of any newly initiated AD investigation has been slightly higher than 1 per cent on an average from 2007 to 2011. But surprisingly it has declined from 2012 onwards.



Source : World Bank's Temporary Trade Barriers Database (Bown, 2010a)

Though China is the most targeted country by its trade partners, it has not targeted its partners heavily in retaliation. China's stock of imports subject to all TTB does not show any significant rise. Its use of TTBs has been limited merely to antidumping measures. It has rarely used CVDs and Safeguard measures as contingent protection. As far as annual import flow measure is concerned, it has always been less than the half a per cent (Bown, 2010).



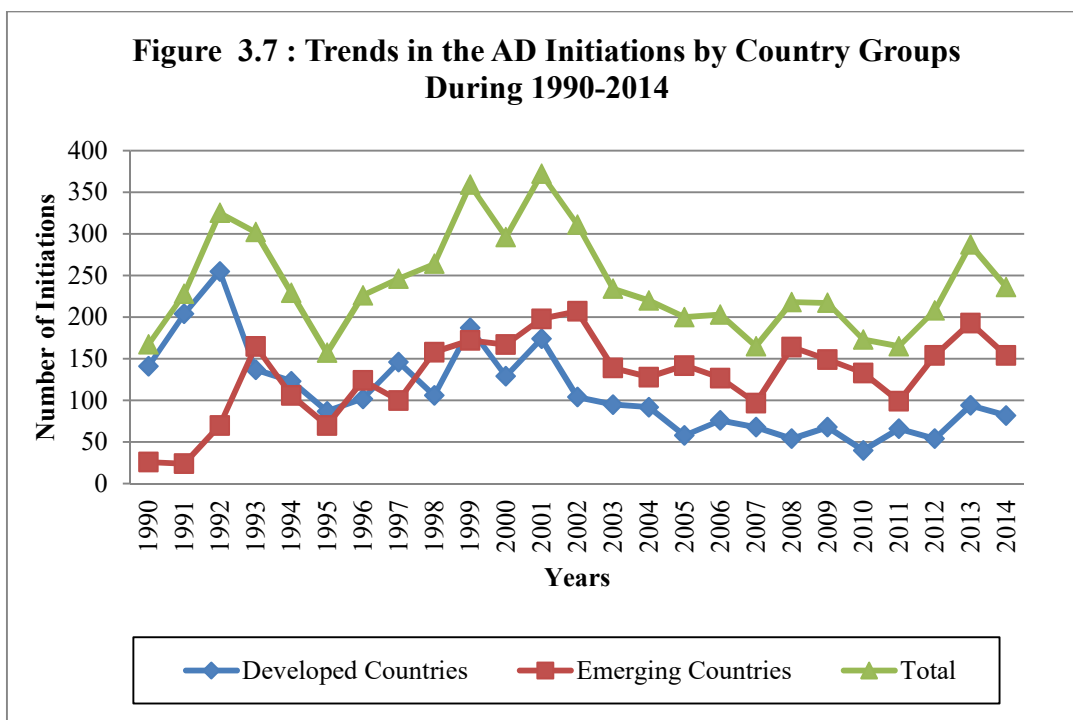
Source: World Bank's Temporary Trade Barriers Database (Bown, 2010a)

3.5 Trends in the Initiations of Anti-Dumping Investigations by Importers

This section deals with trends in the initiations of the antidumping investigations by importers, i.e., the users of antidumping measures. Since there are many countries involved in it, for the sake of simplicity, only top ten users have been selected, whose share in total initiations is around 75 per cent and for all other countries it is just 25 per cent. This analysis is carried out in three subsections i.e. region-wise (country groups), country-wise and sector-wise.

A. Country-Group wise Analysis

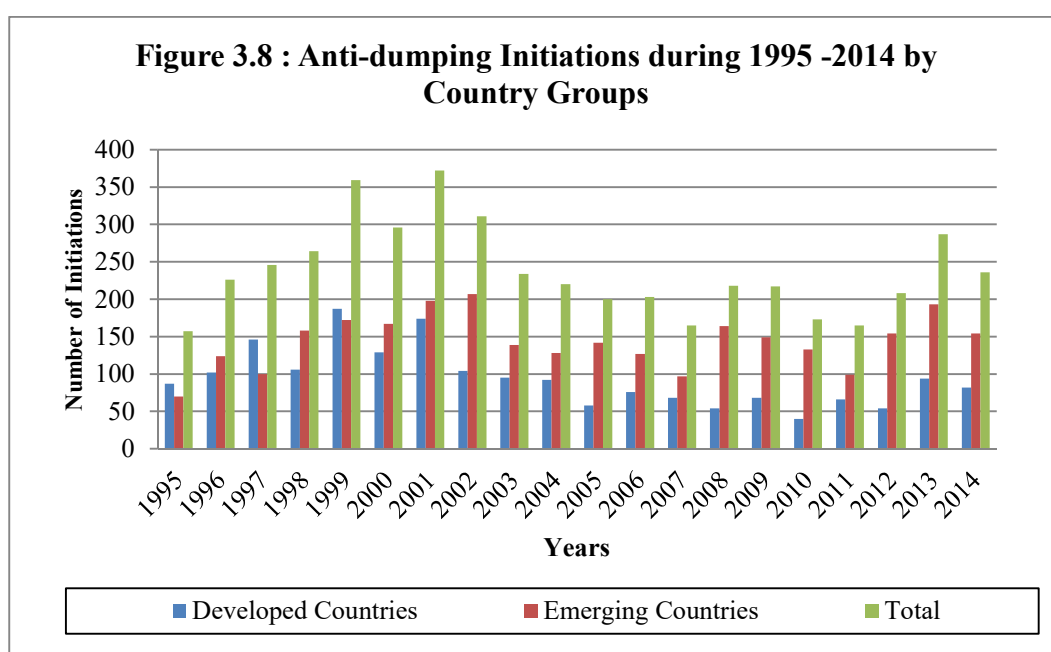
Generally, the extent of antidumping activities is seen through the number of initiations of it by the countries. Therefore, let us, go by that. Figure 7 shows the trends of worldwide antidumping actions over past the two and half decades. To get a realistic picture countries have been grouped in two categories, i.e., developed countries and emerging countries. Alternatively, they are also grouped as traditional users and new users. Traditional users are mostly developed countries such as Australia, US, EU, Canada, New Zealand, etc., and new users are emerging economies from all over the world including OECD members like Argentina, Brazil, Mexico and non-OECD members like China, India, South Africa, Thailand, Malaysia, Indonesia, etc. It is observed that there has been phenomenal growth in the initiations after the inception of WTO. AD investigations initiated by emerging economies were less in early 1990s, whereas developed countries were using it heavily. The figure shows that the emerging economies have overtaken the developed countries after 1996.



The picture after 1996 is completely opposite to the picture before. Out of the total initiations from 1990 to 1994, 69 per cent were initiated by developed countries and merely 31 per cent by emerging countries. Except in 1993 emerging countries' initiations were far less than their counterparts till the year 1995. But in the year 1996 emerging countries have taken the lead in initiating antidumping investigations. Out of the total of 4757 initiations from 1995 to 2014, 2875 were initiated by developing countries which amount to 60.5 per cent and 1882 were initiated by emerging countries which are around 39.5 per cent.

Till 1985 all the cases were initiated only by OECD countries and participation of the developing countries was almost negligible. However, during late 1990s initiations by low and lower middle income developing countries surged sharply. The number of antidumping initiations for low-income countries over 1996-2000 was ten times that of what it was in the early 1990s. The share of the OECD and upper middle-income countries in the initiations of AD investigations declined marginally during this period and the share of developing or emerging or low income countries increased. Thus, the developing countries joined the rally of active antidumping users by the late 1990s which resulted in the surge of AD initiations.

Country Groups	Developed Countries	Emerging Countries	Total
1990	141	26	167
1991	204	24	228
1992	255	70	325
1993	137	165	302
1994	123	106	229
Total	860	391	1251
% share	68.745	31.255	100



B. Country wise analysis: Top ten users

Country group wise analysis discussed above can better be understood by disaggregating it to the country-level and going to the source of problem. The country wise analysis is limited to top ten user countries of the world. These countries include India, US, EU, Brazil, Argentina, Australia, South Africa, China, Canada and Turkey in the descending order. Though India joined the club of AD users in 1992 and effectively in 1995, she has used the AD policy very heavily and has become the top user with around 16 per cent share in total initiations.

Table 3.8 depicts trends in the initiations of anti-dumping investigations during 1995-2014 by importing member. The top 10 countries account for almost 77 per cent of all

initiations during this period. Out of the top ten countries six are developing countries and they account for 45 per cent of all initiations. As it can be seen from the table that India has been the most active user with 740 initiations in same period, i.e. it approximately accounts for 16 per cent of all initiations followed by the US and EC. The other active users among developing countries are Argentina, Brazil and South Africa, accounting for 7.6, 6.64 and 6 per cent respectively with China and Turkey accounting for 5.5 and 4 per cent approximately. Thus, developing countries have overtaken the developed countries in the rally of initiating anti-dumping investigations after the inception of WTO. To stand the changes in the pattern of the use of anti-dumping measures, we compare trends in the initiations in pre- and post - WTO period, i.e. 1990-1994 (Table 3.6) and 1995-2012 (Table 3.7). Several observations can be made based on a comparison of Tables 3.6 and 3.7.

Table 3.8 : Anti-Dumping Initiations by Top Ten Users : By Reporting Member for the Period 1995 -2014

Reporting Member	India	United States	European Union	Brazil	Argentina	Australia	South Africa	China	Canada	Turkey	Other	Total
1995	6	14	33	5	27	5	16	N.A.	11	N.A.	40	157
1996	21	22	25	18	22	17	34	N.A.	5	N.A.	62	226
1997	13	15	41	11	14	44	23	N.A.	14	4	67	246
1998	28	36	22	18	6	13	41	3	8	1	88	264
1999	64	47	65	16	24	24	16	2	18	8	75	359
2000	41	47	32	11	41	15	21	11	21	7	49	296
2001	79	77	28	17	28	24	6	14	25	15	59	372
2002	81	35	20	8	10	16	4	30	5	18	84	311
2003	46	37	7	4	1	8	8	22	15	11	75	234
2004	21	26	30	8	12	9	6	27	11	25	45	220
2005	28	12	24	6	9	7	23	24	1	12	54	200
2006	31	8	35	12	10	11	3	10	7	8	68	203
2007	47	28	9	13	7	2	5	4	1	6	43	165
2008	55	16	19	24	19	6	3	14	3	23	36	218
2009	31	20	15	9	28	9	3	17	6	6	73	217
2010	41	3	15	37	14	7	N.A.	8	2	2	44	173
2011	19	15	17	16	7	18	4	5	2	2	60	165
2012	21	11	13	47	12	12	1	9	11	14	57	208
2013	29	39	4	54	19	20	10	11	17	6	78	287
2014	38	19	14	35	6	22	2	7	13	12	68	236
Total	740	527	468	369	316	289	229	218	196	180	1225	4757
Share %	15.56	11.08	9.84	7.76	6.64	6.08	4.81	4.58	4.12	3.78	25.75	100

Source : WTO Database on Antidumping.

Note : N.A.= Not Available.

Table 3.9: Antidumping Initiations by Importing Country during 1990-1994							
Importing Country	1990	1991	1992	1993	1994	Total	% Share
Australia	47	68	71	59	15	260	20.78
United States	34	63	82	32	48	259	20.70
European Union	50	29	42	21	43	185	14.79
Mexico	11	9	26	66	22	134	10.71
Canada	15	11	46	25	2	99	7.91
Brazil	2	7	9	40	9	67	5.36
Argentina	0	1	14	28	17	60	4.80
New Zealand	1	9	14	0	6	30	2.40
Turkey	0	0	0	7	21	28	2.24
Poland	0	24	0	0	0	24	1.92
Korea, Rep. of	5	0	5	5	4	19	1.52
South Africa	0	0	0	0	16	16	1.28
India	0	0	8	0	7	15	1.20
Thailand	0	0	0	3	0	3	0.24
Peru	0	0	0	0	3	3	0.24
Others	2	7	8	16	16	49	3.92
Total	167	228	325	302	229	1251	100

Source : WTO Database on Antidumping.

During the period 1990-94, 1251 cases were initiated by all the AD users, out of that top five countries (Australia, US, EU, Mexico and Canada) initiated 75 per cent of the AD cases and if we consider top ten countries it goes up to 92 per cent. Surprisingly, India, South Korea, South Africa and Thailand do not find a place in top ten users. The share of top five countries has come down in the period 1995-2014 to nearly 32 per cent. This has not happened because the traditional users have reduced their use of AD measures but the use by many new users has increased significantly. So the composition of the most active users has changed histrionically over a period of time. There were five developing countries in the list of top ten countries during 1990-94, whereas there are six of them in the top ten in the period 1995-2014. The sixth developing country is India which was not the part of top ten clubs earlier. It has been noted earlier that the share of the developing countries in total initiations increased significantly. They countries accounted for only 25 per cent of all initiations during 1990-1994, whereas their share increased to 58 per cent during 1995-2014 out of

which 43 per cent is contributed by top six developing countries and rest 15 per cent by all other developing countries.

There are other interesting observations, especially about the developing world. Undoubtedly, India deserves mention with top priority in this regard. India did not initiate any investigation in 1990, 1991 and 1993. It initiated eight investigations in 1992 and seven in 1994, bringing its total initiations to 15 during 1990-1994, which stands 1 per cent of all initiations. Though India contributed only 1 per cent initiations during 1990-94, it has evolved as a top user of AD measures from 1995 to 2014 with nearly 16 per cent of the total initiations. South Africa also deserves to be mentioned in that it increased its share in initiations from 1 per cent in 1990-1994 up to 4.81 per cent in 1995-2014.

The shares of US and EU were 21 and 15 per cent respectively during 1990-94 which have come down to 11 and 10 per cent respectively. The share of Argentina has increased from 4.8 to 6.7 per cent. Similarly, the share of Brazil has increased from 4 to 7.76 per cent.

All the cases initiated till 1985 were initiated by OECD countries; Australia, Canada, EU and United States. After that Mexico joined the antidumping club as a major user. Other Latin American countries, i.e., Argentina, Brazil, and Columbia followed Mexico in the early 1990s. Lower middle and lower income countries such as South Africa, Egypt, Peru, Philippines and India started using antidumping significantly by the late 1990s.

Only four countries reported antidumping initiations in 1980 which increased to ten in 1990s. Till 2000 forty-one countries reported the initiations out of which six were OECD and five non-OECD developed countries while the rest were all developing countries. By 2010 the number of AD users increased to 48 but surprisingly there was no change in the number of traditional users. But seven more developing countries have started new investigations.

Year	Number of Users	Developed (traditional users)	Emerging (new users)
1980	04	04	00
1990	10	08	02
2000	41	11	30
2010	48	11	37
2014			

Source: Computed by Author from WTO Database.

Reporting Countries	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
1) Traditional Users																					
Australia	5	17	44	13	24	15	24	16	8	9	7	11	2	6	9	7	18	12	20	22	289
Canada	11	5	14	8	18	21	25	5	15	11	1	7	1	3	6	2	2	11	17	13	196
European Union	33	25	41	22	65	32	28	20	7	30	24	35	9	19	15	15	17	13	4	14	468
New Zealand	10	4	5	1	4	9	1	2	5	5		1	6			1	2		1		57
United States	14	22	15	36	47	47	77	35	37	26	12	8	28	16	20	3	15	11	39	19	527
Total	73	73	119	80	158	124	155	78	72	81	44	62	46	44	50	28	54	47	81	68	1537
2) New Users																					
Argentina	27	22	14	6	24	41	28	10	1	12	9	10	7	19	28	14	7	12	19	6	316
Brazil	5	18	11	18	16	11	17	8	4	8	6	12	13	24	9	37	16	47	54	35	369
China	0	0	0	3	2	11	14	30	22	27	24	10	4	14	17	8	5	9	11	7	218
India	6	21	13	28	64	41	79	81	46	21	28	31	47	55	31	41	19	21	29	38	740
Mexico	4	4	6	12	11	6	6	10	14	6	6	6	3	1	2	2	6	4	6	14	129
South Africa	16	34	23	41	16	21	6	4	8	6	23	3	5	3	3		4	1	10	2	229
Others	26	54	60	76	68	41	67	90	67	59	60	69	40	58	77	43	54	67	77	66	1219
Total	84	153	127	184	201	172	217	233	162	139	156	141	119	174	167	145	111	161	206	168	3220
Over all Total	157	226	246	264	359	296	372	311	234	220	200	203	165	218	217	173	165	208	287	236	4757
Traditional Users (%)	46.5	32.3	48.37	30.3	44	41.9	42	25	31	37	22	31	28	20	23	16.2	33	23	28.2	29	32.3
New Users (%)	53.5	67.7	51.63	69.7	56	58.1	58	75	69	63	78	69	72	80	77	83.8	67	77	71.8	71	67.7

Source : Computed by Author from WTO Database.

The distribution of antidumping user countries has been highly skewed. In all, only twelve countries are using it actively. These countries account for almost 80 per cent

of the total initiations which occurred during 1995-2014. The four traditional users of antidumping, namely, Australia, Canada, EU and US which accounted 64 per cent during 1990-1995, still account for 31 per cent of the total initiations in the world. These four countries account for almost 90 per cent of the total initiations by OECD countries during 1995-2014. Table 3.7 compares the initiations reported by these traditional users with the relatively new users who are mostly developing countries.

Traditional users are OECD countries whereas, new user are Argentina, Brazil, China, India, Mexico and South Africa. They are mostly emerging (lower-middle and lower income) economies. Other countries which are not mentioned here are Thailand, Malaysia, Turkey, and Indonesia. Although the traditional user's share in total initiations has come down to 32 per cent, it is still high because these are only five countries which contribute one-third of initiations out of 48 countries. That means the rest of 43 countries together contribute 68 per cent initiations. In the category of new users, top six countries mentioned in the table contribute 2001 (62 per cent) initiations out of 3220 initiations. They initiated 42 per cent of the total world initiations.

According to an estimate (Zanardi 2004), around forty developing countries have not initiated investigations even if they have an AD law. Vermulst (2005) notes that complex methodology related to the calculation of dumping and injury margins, as well as the very detailed procedural compliance that the authorities need before taking an antidumping action, make the use of AD laws difficult to apply and understand in practice.

C. Sector wise analysis

This section deals with the sectors wise analysis of antidumping initiations by major users. It is based on the Harmonized System (HS) codes used internationally. As per this classification there are twenty one chapters classified/ grouped. Just to identify most frequently named sectors, only top ten sectors have been selected for the analysis. Table 3.8 shows a sectoral breakdown of global antidumping initiations. The sectors have been arranged in a descending order. Table 3.9 shows the percentage share of each sector. It is evident that the highest numbers of cases have been initiated in the sector of base metals and articles (XV). Out of 4757 initiations, 1379 cases have been initiated in this sector which accounts for 29 per cent. The second most targeted sector is chemical and allied industries. Almost 20 per cent cases during 1995-2014 were initiated in this sector. Dumping cases tend to be concentrated in

these sectors because the world markets for steel, base chemicals and plastics are highly cyclical and therefore at the bottom of a cycle, firms operating in these markets may turn to pricing sales below cost (Miranda et al. 1998). It is also possible that the downturn domestic firms in importing countries use antidumping law to protect themselves and since there is a very high probability of affirmative injury findings during this period, they rush to file antidumping cases (Aggarwal 2003, p. 144).

3.6 Who Has Targeted What?

We know that base metals and chemical industries are the most targeted sectors. India is a major player in filing the antidumping cases, followed by US and EU respectively. India filed 44% of its cases into the chemical industries, whereas US filed 54% of its cases in base metals. When we further split the analysis we can infer that there is a trend between developing and developed nations while filing the cases as shown in Table 3.10. Developing countries mostly file the cases into chemical or allied industries (VI) and plastic and rubbers (VII), whereas developed nations file most of the cases in the steel industry (XV). Developing countries filed most cases in the Chemical Industries (VI), while Brazil and Turkey filed cases in Plastic and Rubber (VII). Developed Countries filed cases mostly in Steel Industry (XV). Tables 3.12, 3.13 and 3.14 give depict year-wise, sector-wise and country-wise distribution of the initiations during 1995-2014.

HS Section Name	XV	VI	VII	XVI	XI	X	XIII	IX	XX	V	Others	Total
1995	43	31	20	24	1	3	3	1	6	1	24	157
1996	39	42	26	33	23	14	11	4	5	4	25	226
1997	64	21	36	34	8	36	11	11	4	3	18	246
1998	111	24	33	10	28	7	12	3	5	4	27	264
1999	111	74	40	30	36	18	8	1	13	9	19	359
2000	109	63	24	30	17	5	6	5	7	9	21	296
2001	137	67	56	24	27	7	6	4	6	16	22	372
2002	96	96	40	9	7	7	11		11	8	26	311
2003	53	73	24	12	14	20	11	11	2	5	9	234
2004	38	49	44	16	21	8	8	11	3	1	21	220
2005	39	37	37	16	27	6	10	3	7		18	200
2006	31	39	24	30	17	17	12	2	6	2	23	203
2007	23	56	16	28	12	19	3	1	2	2	3	165
2008	70	34	21	16	39	2	4	9	5	2	16	218
2009	52	47	31	22	20	8	11	7	3	1	15	217
2010	43	44	24	10	7	20	12	5		4	4	173
2011	58	29	13	8	2	11	14	13		2	15	165
2012	76	34	40	18	12	6	13	1	1	2	5	208
2013	97	48	41	21	21	12	23	5	5		14	287
2014	89	53	45	17	7	3	5	1	1	1	14	236
Total	1379	961	635	408	346	229	194	98	92	76	339	4757
Share %	28.99	20.20	13.35	8.58	7.27	4.81	4.08	2.06	1.93	1.60	7.13	100

Source: WTO Database on Antidumping

Rank	Sectors	% share
1	XV Base Metals and articles of base metal	28.99
2	VI Product of the chemical or allied Industries	20.20
3	VII Plastics and articles thereof; Rubber and articles thereof	13.35
4	XVI Machinery and mechanical appliances; Electrical equipment; parts of thereof; sound recorder; television images; accessories of such articles	8.58
5	XI Textiles and textile articles	7.27
6	X pulp of wood or of other fibrous cellulosic material; Recovered	4.81
7	XIII Articles of stone , plaster, cement asbestos, mica or similar material; ceramic products; glass	4.08
8	XX Miscellaneous manufactured articles and mineral product	2.06
9	I Live animals, animal products	1.93
10	II Vegetable product	1.60
11	Others	7.12

Source: Calculated by the author from the WTO's Database on Antidumping

Table 3.14 : Anti-dumping Sectoral Distribution of Initiations : By Reporting Members 1995 – 2014

Reporting Member	India	United States	European Union	Brazil	Argentina	Australia	South Africa	China	Canada	Turkey	Others	Total
I	N.A.	15	8	5	2	N.A.	6	1	N.A.	N.A.	21	58
II	N.A.	13	2	1	N.A.	5	2	1	7	N.A.	29	60
III	1	N.A.	N.A.	N.A.	N.A.	2	2	N.A.	N.A.	N.A.	10	15
IV	N.A.	9	2	1	3	11	2	2	9	N.A.	26	65
V	9	8	6	7	1	6	1	4	N.A.	N.A.	34	76
VI	327	72	87	70	39	27	32	122	7	10	168	961
VII	101	40	35	117	30	63	37	39	2	50	121	635
VIII	N.A.	N.A.	4	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1	5
IX	9	3	9	1	10	15	2	N.A.	9	7	33	98
X	14	15	1	13	13	29	19	16	5	1	103	229
XI	67	14	43	24	24	7	11	4		50	102	346
XII	1	N.A.	9	1	1	N.A.	1	N.A.	7	N.A.	12	32
XIII	21	5	11	20	16	17	27	2	4	11	60	194
XIV	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1	1
XV	89	287	171	80	83	83	60	16	138	26	346	1379
XVI	90	34	58	11	65	16	15	1	5	15	98	408
XVII	6	7	9	N.A.	6	5	3	2	N.A.	1	12	51
XVIII	3	N.A.	1	4	11	1	8	8	N.A.	1	14	51
XIX	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0	N.A.
XX	2	5	12	14	11	2	1	N.A.	3	8	34	92
XXI	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0	N.A.
...	N.A.	N.A.	N.A.	N.A.	1	N.A.	N.A.	N.A.	N.A.	N.A.	0	1
Total	740	527	468	369	316	289	229	218	196	180	1225	4757
Shares%	15.60	11.09	9.84	7.76	6.64	6.08	4.81	4.58	4.12	3.78	15.56	100
Average	33.60	23.95	21.27	16.77	14.36	13.14	10.41	9.91	8.91	8.18	33.64	216

Source : WTO Database on Antidumping

Note : N.A.=Not Available

3.7 Trends in the use of Anti-Dumping Measures by Importers

A. Country-wise

Table 3.15 and 3.16 depict the imposition or use of antidumping measures by the WTO members between 1995-2014 and 1990-1994. India is the top AD initiator in the world and it imposes maximum measures. From 1995 to 2014, it imposed 534 measures. It imposed maximum of 64 measures in a 2002. It is followed by the US, EU and Argentina in the ranking of imposition.

Reporting members	India	United States	European Union	Argentina	Brazil	China	Turkey	South Africa	Australia	Canada	Others	Total
1995	7	33	15	13	3		11		1	7	30	120
1996	2	12	23	20	6			8	1		20	92
1997	8	20	23	11	2			18	1	7	37	127
1998	22	16	28	12	14	3		13	20	10	47	185
1999	23	24	18	9	5	2	1	36	6	10	56	190
2000	55	31	41	16	9	5	8	13	5	14	41	238
2001	38	33	13	14	13		2	5	11	19	21	169
2002	64	27	25	22	5	5	11	15	9		35	218
2003	52	12	2	19	2	33	28	1	10	5	59	223
2004	29	14	10	1	5	14	16	4	4	8	49	154
2005	18	18	20	8	3	16	9		3	4	39	138
2006	16	5	12	4		24	21	7	5		48	142
2007	24	5	12	8	9	12	6	1	1	3	25	106
2008	31	23	15	5	11	4	11	3	3	3	33	142
2009	30	15	9	16	16	12	9	3	2	2	29	143
2010	32	17	5	15	5	15	10	1	2	3	29	134
2011	26	4	11	8	13	6	2		5	1	23	99
2012	30	7	3	9	14	5	1	1	10	10	30	120
2013	12	7	12	9	30	8	8	2	9	7	57	161
2014	15	22	1	9	32	12	9	1	14	6	36	157
Total	534	345	298	228	197	176	163	132	122	119	744	3058
Shares %	17.46	11.28	9.74	7.46	6.44	5.76	5.33	4.32	3.99	3.89	17.46	100
Averages	26.7	17.25	14.9	11.4	9.85	8.8	8.15	6.6	6.1	5.95	26.7	152

Source : WTO Database on Antidumping

Importing country	1990	1991	1992	1993	1994	Total	%
United States	17	17	23	46	28	131	26
European Communities	16	19	18	20	20	93	18
Australia	6	23	35	13	14	91	18
Canada	7	12	9	25	21	74	14
Mexico	3	10	7	8	25	53	10
Brazil	0	2	9	6	3	20	4
New Zealand	0	5	11	0	0	16	3
Korea, Rep. of	0	2	0	4	3	9	2
Others	1	0	4	5	14	24	5
Total	50	90	116	127	128	511	100

Source : WTO Database on Antidumping

Table 3.15 shows that the top ten most active users of anti-dumping measures accounted for roughly 82 per cent of the total measures. The six developing countries among the top ten users have imposed 48 per cent measures. Thus the share of the developing countries' has gone up considerably and it is almost equal to the developed countries. Table 3.16 indicates that in the period 1990-1994, top ten active users of anti-dumping measures accounted for 97 per cent of all impositions. There were five developing countries among the top ten users which accounted for only 18 per cent of all impositions.

It is obvious to note the observations regarding the use of measures are similar to the initiations. It is simply because the one who initiates more cases is expected to impose more measures. As in the case of initiations, here too the number of the users of anti-dumping measures went up significantly after inception of the WTO, compared with the period 1990-1994. The share of the ten most frequent users dropped to 82 per cent during 1995-2014, from 97 per cent during 1990-1994. It can be noted that the composition of active users have also changed. The number of developing countries among top ten has increased from five to six. As far as use of measures is concerned, the developing countries have used more measures than earlier. They were accounting for only 18 per cent of the measures during 1990-1994, that has increased to 49 per cent during 1995-2014. The data on the imposition of definitive anti-dumping measures clearly reveals that in the initiation of investigations developing countries have emerged as the main users of in the post-WTO period.

Table 3.17 : Anti-Dumping Measures : By Sector 1995 – 2014											
HS Section Name	V Mineral products	IX Wood, cork and articles; basket ware	XX Miscellaneous manufactured articles	XIII Articles of stone, plaster; ceramic prod.; glass	X Paper, paperboard and articles	XVI Machinery and electrical equipment	XI Textiles and Articular	VII Resins, plastics and articles; rubber and article	VI Products of the chemical and allied industries	XV Base metals and articular	Total
1995	N.A.	1	7	3	2	9	4	10	19	49	104
1996	1	N.A.	3	3	N.A.	17	8	11	12	24	79
1997	2	1	7	1	2	16	9	13	22	46	119
1998	3	6	3	6	29	30	2	14	15	64	172
1999	1	7	3	5	5	4	21	27	15	85	173
2000	5	1	5	7	10	14	26	26	49	83	226
2001	11	N.A.	3	1	2	11	9	11	38	65	151
2002	8	3	7	2	6	15	30	25	57	59	212
2003	2	N.A.	4	10	10	8	2	48	68	65	217
2004	7	4	3	4	4	6	14	22	46	39	149
2005	N.A.	5	2	5	10	12	13	23	31	24	125
2006	N.A.	5	6	7	7	9	23	28	27	16	128
2007	1	N.A.	2	5	4	15	17	7	28	11	90
2008	1	3	1	4	11	12	10	25	46	28	141
2009	2	6	5	4	N.A.	27	30	13	18	29	134
2010	N.A.	N.A.	1	5	2	14	17	15	32	40	126
2011	3	2	N.A.	13	4	7	2	12	28	21	92
2012	N.A.	1	N.A.	8	13	7	3	8	36	40	116
2013	3	5	1	11	1	11	5	30	22	69	158
2014	N.A.	1	1	19	4	8	8	21	31	61	154
Total	50	51	64	123	126	252	253	389	640	918	2866
Shares %	1.74	1.78	2.23	4.29	4.40	8.79	8.83	13.57	22.33	32.03	100
Source : WTO Database on Antidumping											
Note : N.A.=Not Available											

B. Sector- Wise

Similarly, in sector wise analysis of anti-dumping measures, as in the initiations, most of the cases were filed in the textiles (XI), Plastics and rubber (VII), Chemical and allied industries (VI), Textiles (XI) and Machinery (XVI) as shown in Table 3.17. Total number of cases filed in these top five sectors contributed around 85% of the top 10 sectors. In base metal sector (XV) 32% of the cases were filed out of top 10 sectors.

Table 3.18 : Sectors Affected by Anti-Dumping Measures 1990-1994							
Sector	1990	1991	1992	1993	1994	Totals	%
Metals and metal products (XV)	7	15	19	74	43	158	31
Chemical products (VI)	13	26	18	17	27	101	20
Machinery, electrical appliances (XVI)	8	22	8	12	11	61	12
Plastic and rubber products (VII)	6	7	22	5	8	48	9
Textiles (XI)	3	2	14	3	12	34	7
Cement, glass, ceramics (XIII)	0	2	7	3	8	20	4
Mineral products	2	4	5	4	2	17	3
Pulp and paper	3	3	2	1	6	15	3
Footwear	6	0	6	2	0	14	3
Foodstuffs, beverages, spirits, tobacco	0	4	6	0	0	10	2
Miscellaneous manufactures	0	4	0	1	5	10	2
Photographic, precision, timing equipment	1	0	3	2	1	7	1
Vehicles	1	0	3	1	1	6	1
Vegetable products	0	0	2	0	1	3	1
Fats, oils, waxes	0	0	0	2	0	2	0
Arms and ammunition	0	0	0	0	2	2	0
Animal products	0	1	0	0	0	1	0
Wood	0	0	1	0	0	1	0
Others	0	0	0	0	1	1	0
Total	50	90	116	127	128	511	100
Source: WTO Database on Antidumping							

In table 3.18 it is given that the sectoral anti-dumping measures from the year 1990-1994 trends between the sectors seems to be same for both the table. Only the percentage of filing in the top five sectors has increased marginally due to the introduction of the WTO. Most of the cases filed in top ten sectors were in 2000, 2002 and 2003.

3.8 Who and what Targeted?

After the WTO most of the antidumping cases were filed on China, nearly contributing 22% followed by South Korea and US contributing 7.33% and 5.59% respectively. In Table 3.19 it is evident that developing countries (considering Russian Federation as a developing country as of 2015) are being targeted contributing the largest share of around 39.49 % from top 10 countries being targeted whereas developed countries shares was only 22.42%. The reason behind it may be that developing countries produce output at lower prices supported by government

subsidies and they might be eager to enter the world market by selling products cheaper.

Table 3.19 : Most Frequently Named Countries During 1995-2014			
Sr. No.	Exporting Country	No. of Cases	% Share
1	China	1052	22.11
2	Korea, Republic of	349	7.3366
3	United States	266	5.592
4	Taipei, Chinese	265	5.571
5	Thailand	197	4.14
6	India	192	4.04
7	Japan	187	3.93
8	Indonesia	183	3.84
9	Russian Federation	136	2.85
10	Malaysia	125	2.62
11	Others	1805	22.1
	Total	4757	100
Source: WTO Database on Antidumping			

In Table 3.20 the sectoral distribution of initiations by exporting countries is given during 1995-2014. China, which is major exporter in the world, also targeted mostly in Chemical and allied industries (VI), Steel Industry (XV) and Machinery elements (XVI) sectors. South Korea is targeted mostly in the areas of Steel Industry (XV), Chemical and allied industries (VI) and Plastics and rubber (VII) sectors. The highly targeted sectors are Steel Industry (XV), Chemical and allied industries (VI).

Expo- rter	China	Korea, Republic of	United States	Taipei, Chinese	Thailand	India	Japan	Indonesia	Russian Federation	Malaysia	Other	Total
I	2	N.A.	9	N.A.	1	1	N.A.	N.A.	1	N.A.	44	58
II	10	N.A.	7	N.A.	1	4	N.A.	3	N.A.	N.A.	35	60
III	N.A.	N.A.	2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	13	15
IV	5	2	5	N.A.	5	N.A.	N.A.	2	N.A.	N.A.	46	65
V	14	2	6	1	5	N.A.	4	4	2	1	37	76
VI	206	58	114	46	26	44	55	24	31	13	344	961
VII	81	75	52	45	46	33	24	28	12	17	222	635
VIII	5	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0	5
IX	20	N.A.	5	N.A.	4	N.A.	N.A.	5	2	8	54	98
X	26	21	18	7	7	3	15	28	3	4	97	229
XI	86	39	6	35	25	23	1	24	1	19	87	346
XII	19	N.A.	N.A.	1	1	2	N.A.	3	N.A.	N.A.	6	32
XIII	70	N.A.	5	7	12	5	2	20	4	4	65	194
XIV	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1	1
XV	283	104	19	88	41	61	58	26	79	39	581	1379
XVI	132	42	10	22	18	13	23	9	1	18	120	408
XVII	25	2	2	5	1		2	1	N.A.	1	12	51
XVIII	17	3	3	1	1	1	3	N.A.	N.A.	N.A.	22	51
XIX	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0	N.A.
XX	51	1	3	7	3	2		6	N.A.	1	18	92
XXI	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0	N.A.
...	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1	1
Total	1052	349	266	265	197	192	187	183	136	125	1805	4757
Shares %	22.11	7.34	5.59	5.58	4.15	4.04	3.94	3.85	2.86	2.63	22.1	100

Source : WTO Database on Antidumping
Note : N.A.=Not Available

In Table 3.21 it is evident that there is a similar trend as in Table 3.10. It is pretty obvious, where India has initiated maximum number of investigations. Therefore as it is expected that it has imposed most of the antidumping duties levied by developing countries to exporters of the Chemical and allied industries (VI) whereas for developed countries it is steel industry (XV). US, EU, Australia and Canada imposed maximum duties in the Steel industry (XV). India and China imposed maximum duties on Chemical and allied industry sector (VI).

Reporting Member	India	United States	European Union	Argentina	Brazil	China	Turkey	South Africa	Australia	Canada	Total
I	0	11	4	1	4	1	0	1	0	0	22
II	0	10	2	0	2	1	0	1	3	5	24
III	0	0	0	0	0	0	0	0	0	0	0
IV	0	9	1	0	1	0	0	0	7	6	24
V	5	4	6	1	5	4	0	0	1	0	26
VI	244	46	61	12	32	95	11	21	10	4	536
VII	83	23	19	23	44	36	48	26	17	0	319
VIII	0	0	2	0	0	0	0	0	0	0	2
IX	8	3	9	3	0	0	6	0	1	4	34
X	9	10	1	9	12	13	0	10	19	1	84
XI	61	12	23	21	20	3	42	11	5	0	198
XII	1	0	7	1	1	0	0	0	0	2	12
XIII	14	4	7	13	16	0	7	15	6	2	84
XIV	0	0	0	0	0	0	0	0	0	0	0
XV	46	187	111	65	45	15	28	34	45	90	666
XVI	57	20	32	49	8	1	11	5	7	3	193
XVII	2	2	8	8	0	2	1	0	1	0	24
XVIII	2		2	7	2	5	1	8	0	0	27
XIX	0	0	0	0	0	0	0	0	0	0	0
XX	2	4	3	15	5	0	8	0	0	2	39
XXI	0	0	0	0	0	0	0	0	0	0	0
...	0	0	0	0	0	0	0	0	0	0	0
Total	534	345	298	228	197	176	163	132	122	119	2314
Shares %	23.08	14.91	12.88	9.85	8.51	7.61	7.04	5.70	5.27	5.14	100

Source : WTO Database on Antidumping

After the emergence of WTO, China remains on the radar of reporting countries in the imposition of dumping duties. Around 25% of duties were imposed only on China from 1995 to 2014 as depicted in Table 3.22. This shows the aggressive policies implemented by Chinese Government to increase exports by killing the domestic industry of the reporting countries. Most of the dumping duties were imposed during 2000, 2002 and 2003.

Exporter	China	Korea, Republic of	Taipei, Chinese	United States	Japan	Thailand	Indonesia	India	Russian Federation	Brazil	Other	Total
1995	27	4	2	8	5	5		4	8	9	48	120
1996	16	6	2	4	6	8	2	1	3	10	34	92
1997	33	3	7	9	5	2	4	5	9	7	43	127
1998	24	15	12	12	9	5	7	7	5	6	83	185
1999	21	15	8	8	11	1	4	9	16	5	92	190
2000	31	23	17	13	22	12	11	7	8	8	86	238
2001	31	12	8	4	9	8	5	6	8	2	76	169
2002	36	13	13	10	5	8	9	6	4	6	108	218
2003	40	22	11	6	11	8	12	7	13	4	89	223
2004	44	13	10	10	6	6	2	10	5	3	45	154
2005	42	8	8	13	7	6	7	2	6	5	34	138
2006	37	10	7	9	8	8	10	12	3	5	33	142
2007	46	6	7	4	4	4	3	3	1	2	26	106
2008	54	8	9	7	3	4	6	6	6	2	37	142
2009	57	7	7	5		10	7	4		3	43	143
2010	56	4	8	7	2	7	8	2	3	4	33	134
2011	37	4	5	7	3	7	4	3	1	2	26	99
2012	35	10	9	9	5	3	2	3	3		41	120
2013	52	18	12	5	5	9	7	6	3	3	41	161
2014	40	12	11	12	8	8	4	6	1	3	52	157
Total	759	213	173	162	134	129	114	109	106	89	1070	3058
Shares %	24.82	6.97	5.66	5.30	4.38	4.22	3.73	3.56	3.47	2.91	34.99	100

Source : WTO Database on Antidumping

In Table 3.23 it is apparent that China was targeted mostly in Chemical and steel industry, South Korea mostly in steel and plastic industry and US in chemical industry. While, cases initiated against Indian exports were mostly in the industries like Steel, Plastic and Chemical. Chinese chemical industry has been the most affected sector. Out of 961 initiations in the chemical industry all over the world, 206 initiations were against the Chinese chemical industry. A similar situation prevails in the metal industry as the Chinese metal industry is the most targeted by the AD users, especially by India, US and EU.

**Table 3.23: Anti-dumping Sectoral Distribution of Initiations by top ten users:
By Exporters, 1995 -2014**

Exporter	China	Korea, Republic of	United States	Taipei, Chinese	Thailand	India	Japan	Indonesia	Russian Federation	Malaysia	other	Total
I	2	N.A.	9	N.A.	1	1	N.A.	N.A.	1	N.A.	44	58
II	10	N.A.	7	N.A.	1	4	N.A.	3	N.A.	N.A.	35	60
III	N.A.	N.A.	2	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	13	15
IV	5	2	5	N.A.	5	N.A.	N.A.	2	N.A.	N.A.	46	65
V	14	2	6	1	5	N.A.	4	4	2	1	37	76
VI	206	58	114	46	26	44	55	24	31	13	344	961
VII	81	75	52	45	46	33	24	28	12	17	222	635
VIII	5	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0	5
IX	20	N.A.	5	N.A.	4	N.A.	N.A.	5	2	8	54	98
X	26	21	18	7	7	3	15	28	3	4	97	229
XI	86	39	6	35	25	23	1	24	1	19	87	346
XII	19	N.A.	N.A.	1	1	2		3	N.A.	N.A.	6	32
XIII	70		5	7	12	5	2	20	4	4	65	194
XIV	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1	1
XV	283	104	19	88	41	61	58	26	79	39	581	1379
XVI	132	42	10	22	18	13	23	9	1	18	120	408
XVII	25	2	2	5	1		2	1	N.A.	1	12	51
XVIII	17	3	3	1	1	1	3	N.A.	N.A.	N.A.	22	51
XIX	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
XX	51	1	3	7	3	2		6	N.A.	1	18	92
XXI	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
...	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1	1
Total	1052	349	266	265	197	192	187	183	136	125	1805	4757
Shares %	22.11	7.34	5.60	5.58	4.15	4.04	3.931	3.85	2.86	2.63	22.1	100
Average	47.82	15.87	12.09	12.05	8.96	8.73	8.5	8.32	6.19	5.69	47.8	

Source : WTO Database on Antidumping
Note : N.A.=Not Available

Table 3.24 shows that antidumping duties are imposed on Chinese exports mostly in the chemical, plastic, machinery and steel industries. Russian federation has seen most of antidumping duties on its exports in the steel industry (about 59%). India has faced most of the duties levied upon its exports of steel, plastic and chemical industries. Tables 3.23 shows sectors affected by anti-dumping measures during 1995-2014 and 1990-1994 respectively. Table reveals that there are not many changes in the composition of affected sectors. Base metal and allied product sectors has been the

most affected sector and chemical sectors is at second highest position. It can be observed from both the tables that Metal and Chemical sectors have targeted continuously, the Base Metals accounted for one third of all impositions during both the periods 1990-1994 and 1995-2014, Whereas, Chemicals accounted almost for one fifth of total impositions during same periods. Textiles sector accounted for seven per cent during 1990-1994 and nine per cent during 1995-2014. There is slight change in the ranking of Plastics and Machinery sectors. The share of machinery sector dropped from twelve per cent to nine per cent, whereas, the share of Plastics have gone up to fifteen per cent during 1995-2014.

3.9 Who is Targeting Whom?

This will be interesting to know that who is targeting and whom? And what are the sectors being targeted by the countries. Tables 3.24 and 3.25 give detail account of the measures imposed by the country group-wise i.e. developed and developing countries.

The very important observation can be noted here is the measures imposed by the developing countries have increased many folds, whereas, there is a little increase in the measures imposed by the developed countries. That could be due to the adoptions of AD laws by many developing countries. Surprisingly, the developing countries are targeting other developing countries. So it is no more developed vs. developing rather it now developing vs. developing countries. At the same time targets of the developed countries are also developing countries. China remains the top target of both the developed and developing countries. India remains the most active country in the imposition of the measures.

Table 3.24 : Anti-Dumping Measures 1995-2014					
Affected countries				Affected countries %	
Group of countries	Developed	Developing	Total	Developed	Developing
Developed	253	750	1003	25.22	74.78
Developing	480	1575	2055	23.35	76.65
Total	733	2325	3058		
Source: Author's calculations based on WTO Database on Antidumping					

Table 3.25: Anti-Dumping Measures 1990-1994					
Affected countries				Affected countries %	
Group of countries	Developed	Developing	Total	Developed	Developing
Developed	146	265	411	35.52	64.48
Developing	40	60	100	40	60
Total	186	325	511		
Source : Author's calculations based on WTO Database on Antidumping					

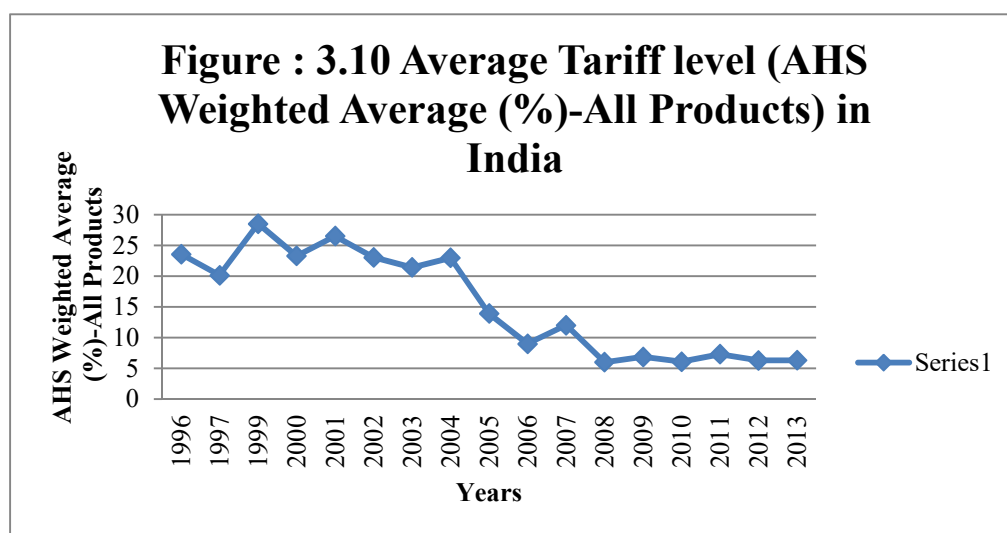
There were only few developed countries that were using AD measures till nineties. But after the formation of WTO, many developed and developing countries have joined the club of the AD users. But developing countries remain affected as compare to the developed countries. Irony here is developing countries are being targeted more by the developing countries. Thus, the anti-dumping is no more a developed vs developing problems. Therefore, the argument that an antidumping measure is protectionist tool used by the developed nations is no more valid. It may, however, be argued that given the increased awareness on the part of industries, which are the main beneficiaries of anti-dumping measures in the importing countries, it may be expected that developing countries will continue to be the main users of anti-dumping measures.

3.10 Trends and Patterns: Indian Experience

This section attempts to provide trends and patterns in the use of antidumping measures by India. The prime objective is to throw light on the various dimensions of the Indian experience of the antidumping policy.

This section covers the Indian experience with dumping and anti-dumping in the post liberalization period. Sections below cover the actions initiated by India and actions initiated against it. As it has been discussed in earlier section, the developing nations like India have been forced to reduce the tariffs and non-tariffs barriers under WTO agreements. Most of the commitments were to be fulfilled before 2005 and in some cases even earlier. India has also been fulfilling her commitment to WTO in the matter of bringing down the trade and non-trade barriers. The peak tariff rate fell from 110% to 25% by 2002-03. The average tariff (ASH Weighted Average (%)) in Figure

3.9) in India also fell drastically from 29 per cent in 1995 to 6 per cent in 2008. India abolished quantitative Restrictions (QRs) by April 2001. A number of Indian industries feel the heat of the competition from rising imports and there are also charges of dumping by foreigners. India initiated the first anti-dumping action in 1992. Between 1992-93 and 2002-03, she initiated 153 anti-dumping actions and between 1995 and 2014 over 700 hundred cases ranking first in the world.



3.11 Anti-dumping Actions Initiated by India

As per the antidumping agreement of WTO, India has established the necessary legal mechanism. The Directorate General of Anti-Dumping (DGAD) is the designated authority in India to investigate the antidumping cases. It has been maintaining the time frame for investigations and they are reported in Government Gazettes. India initiated the first anti-dumping action in 1992-93 and the number of initiations has been increasing over the years. Figure 3.9 shows the trend in this respect. India initiated maximum number of cases 81 in 2002, followed by the years 2001 and 1999. After 2003, the average yearly initiations have come down to 30 per annum.

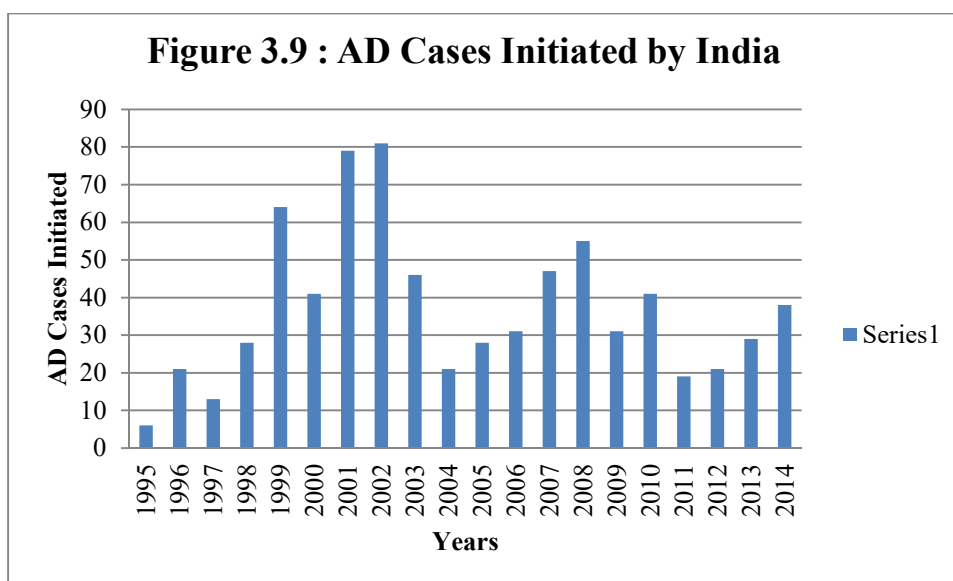


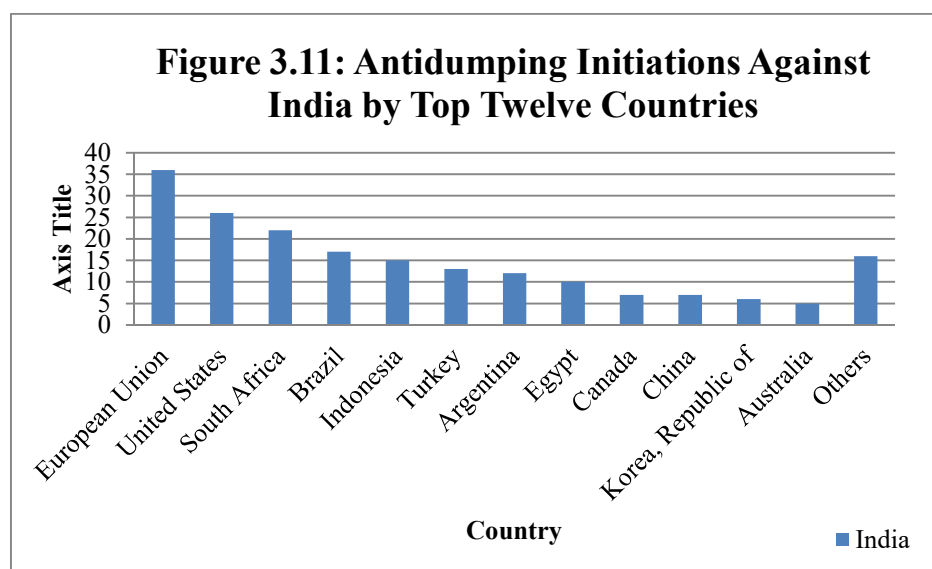
Table 3.26: Cases under Investigation and Duty not Yet Imposed/duty Imposed by India so far Against all Countries (as on 30.6.2014)

Sr. No.	Country	No. of Initiations	Duty Imposed
1	China PR	166	134
2	EU	80	64
3	Korea RP	54	41
4	Chinese Taipei	52	42
5	Thailand	37	28
6	USA	37	28
7	Japan	34	29
8	Singapore	24	19
9	Malaysia	22	17
10	Russia	22	14
11	Others	162	119
	Total	690	535

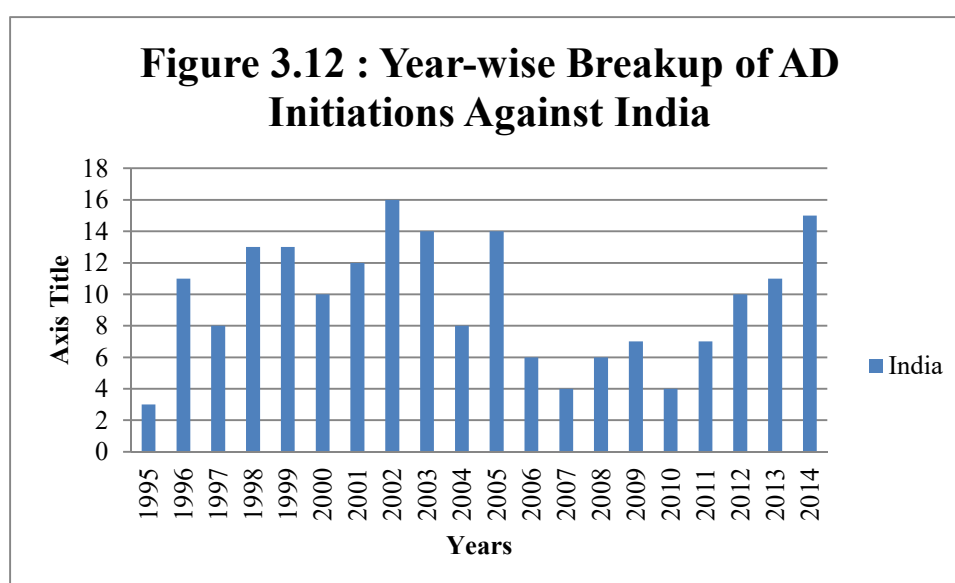
3.12 Anti-Dumping Actions against India

India as an AD user has initiated most of the actions against developing nations. But she has been AD target of the developed countries like the EU and U.S. That account for 50 per cent of the actions against India. US has initiated highest cases against Indian exporters, followed by the EU, South Africa and Brazil. Figures 3.11 and 3.12 give country-wise and year-wise details of action initiated against her. Though, she

has initiated maximum number of cases against China, the latter initiated only one case against her in the ten years under consideration. The year-wise trends show that the cases against India went on increasing from 1995 to 2003 and then dropped significantly. In the recent years they have again increased.



Source: WTO antidumping database



Source: WTO antidumping database

3.13 Industry-Group wise Analysis of Indian AD Initiations and Measures Imposed

Table 3.27 gives product-wise/industry-wise analysis of the Indian AD initiations. Classifications of the products have been done on the basis of Harmonized System

codes. It reveals that India has targeted chemical industry/ chemicals, plastics and rubber, and base metal products extensively. Almost 50 per cent of the products involved in the initiations are chemical. This is followed by plastics-rubber and base metal products. As far as dumping margins are concerned, the highest is found in plastic and rubber industry. It is around 80 per cent, followed by the minerals and machineries products. Therefore, the investigating authority has recommended heavy antidumping duty on these products.

Table 3.27: Industry Group-wise Dumping Margins and Antidumping Duty Imposed					
Product Groups (HS classifications)	No. of Cases	Measures Imposed	Final AD Margin	Final AD Duty Avg. per kg/unit	Final AD Duty Avg for per MT
25-27 (Minerals Product)	11	10	78.28		898.12
28-38 (Chemicals and allied industries)	320	242	57.75	7.18	5863.02
39-40 (Plastic/Rubbers)	100	87	79.63	4.13	9210.7
41-43 (Raw skins, leather)	0	0	0	0	0
44-49 (Wood & wood products)	22	20	47.07	4.09	14979.2
50-63 (Textiles)	64	55	48.18	13.89	9750.06
68-71 (Stones/Glass)	21	19	63.6	106.43	12887
72-83 (Base Metals and Steel Products)	87	52	50.6	4356.83	4965.8
84-85 (Machinery)	81	63	70.4	27.15	11617.68
86-89 (Transport)	4	4	46.95	0	1950.6
90-97 (Other Miscellaneous)	5	4	121.01	44.49	927.2
Total	715	546			

Source: Author's calculation based on DGDO data base

It can be seen from Table 3.27, that the highest measures have been applied in the chemical and allied industry and then plastics and rubbers, machineries and textiles. Out of 546 measures, 242 were imposed in the chemical and allied industries. The top five industries Chemical, Plastics and Rubber, Machinery, Textiles and Base metals account for 499 measures, i.e., it is around ninety per cent of the total.

Tables 3.28, 3.29 and 3.30 explain about the products involved, number of initiations and number of measures imposed on India's Top five AD target countries which are China, Korea, US, EU and Japan. The products involved in the cases initiated are presented in Table 3.28. A total of 206 products of China were involved in 154 cases out of that 104 cases were affirmative and duty was imposed on them. Out of them almost 50 per cent products (101) were of the chemicals and allied industries. India's second AD target has been the EU whose 74 products were involved in 60 cases and in 44 were affirmative case AD duty was recommended. India's third target was Korea and 30 measures were imposed out of 52 cases. Out of 41 cases of the US, 29 were affirmative and for Japan 19 out of 35 cases were affirmative.

Table 3.28 : Products Involved in India's Top Five AD Targets (Countries)					
Product-wise Classifications	China	Korea	EU	US	Japan
25-27 (Minerals Product)	7	0	3	2	1
28-38 (Chemicals and allied industries)	101	35	44	25	23
39-40 (Plastic/Rubbers)	27	12	9	9	10
41-43 (Raw skins, leather)	0	0	0	0	0
44-49 (Wood & wood products)	2	0	3	1	0
50-63 (Textiles)	13	8	1	1	2
64-67 (Footwear & related)	1	0	0	0	0
68-71 (Stones/Glass)	9	0	0	2	0
72-83 (Base Metals and Steel Products)	9	11	11	9	7
84-85 (Machinery)	31	9	2	3	4
86-89 (Transport)	2	1	0	0	0
90-97 (Other Miscellaneous)	4	2	1	0	0
Total	206	78	74	52	47
Source: DGAD data base available on website					

Product-wise Classifications	China	US	EU	Korea	Japan
25-27 (Minerals Product)	7	2	3	0	1
28-38 (Chemicals and allied industries)	81	21	38	19	19
39-40 (Plastic/Rubbers)	8	6	7	9	7
41-43 (Raw skins, leather)	0	0	0	0	0
44-49 (Wood & wood products)	2	1	3	0	0
50-63 (Textiles)	11	1	1	6	1
64-67 (Footwear & related)	4	0	0	0	0
68-71 (Stones/Glass)	7	2	0	0	0
72-83 (Base Metals and Steel Products)	9	5	5	7	4
84-85 (Machinery)	20	3	2	8	3
86-89 (Transport)	2	0	0	1	0
90-97 (Other Miscellaneous)	3	0	1	2	0
Total	154	41	60	52	35

Source: DGAD data base available on website

Product-wise classifications	China	US	EU	Korea	Japan
25-27 (Minerals Product)	7	1	3	0	0
28-38 (Chemicals and allied industries)	59	14	28	10	10
39-40 (Plastic/Rubbers)	8	4	5	7	6
41-43 (Raw skins, leather)	0	0	0	0	0
44-49 (Wood & wood products)	2	1	1	0	0
50-63 (Textiles)	6	1	1	5	1
64-67 (Footwear & related)	1	0	0	0	0
68-71 (Stones/Glass)	4	2	0	0	0
72-83 (Base Metals and Steel Products)	5	4	4	3	1
84-85 (Machinery)	9	2	1	3	1
86-89 (Transport)	1	0	0	0	0
90-97 (Other Miscellaneous)	2	0	1	2	0
Total	104	29	44	30	19

Source: DGAD data base available on website

3.14 Conclusions

Anti-dumping actions have proliferated in the past two decades. Up to nineties, these measures were used by developed countries. But the developing countries have also started using them more and more after the establishment of WTO. The surge of contingent protection measures is also attributed to the tariff reduction which was an important issue during the process of multilateral trade negotiations which forced

WTO members to reduce the tariff and other quantitative restrictions on trade. Average applied tariffs have declined from 35 per cent in 1995 to 3 per cent in 2013. The uses of contingent protection such as countervailing duty, antidumping duty and safeguard measures have amplified dramatically after 1995. The initiations of contingent protection in four years increased significantly from 169 in 1995 to 415 in 1999 or more than the double. Out of total contingent measures initiations, antidumping initiations accounts for 86 per cent and countervailing duty and safeguards both together contribute only 14 per cent. In all 4757 AD initiations have been filed till the end of 2014.

The analysis of trends and patterns in the AD initiations by the importers i.e. the users of the antidumping measures reveal many interesting patterns. Since there are many countries involved in it, for the sake of simplicity, we have analysed it for top ten users whose share is around 75 per cent and for all other countries it is just 25 per cent. This analysis is carried out in three sub-sections, i.e., region-wise (country groups), country-wise and sector wise.

AD investigations initiated by emerging economies were less in early 1990s, whereas developed countries were using it heavily. The emerging economies have overtaken the developed countries after 1996. The situation after 1996 is altogether different. Out of the total initiations from 1990 to 1994, 69 per cent were initiated by developed countries and merely 31 per cent by emerging countries. Except in 1993, emerging countries' initiations were far less than their counterparts till the year 1995. But in the year 1996 emerging countries took the lead in initiating antidumping investigations. Out of 4757 initiations during 1995- 2014, 2875 were initiated by developing countries which amounts to 60.5 per cent and in 1882 they were around 39.5 per cent.

Top ten countries account for 75 per cent of all initiations and there are six are developing countries among top ten. Developing countries account for 43 per cent of total initiations by the top ten users. India has been the most active user with 740 initiations, i.e., approximately 16 per cent of all initiations, followed by the US and EC. The other active users among developing countries are Argentina, Brazil and South Africa, accounting for 7.6, 6.64 and 6 per cent respectively.

During the period 1990-94, total of 1251 cases were initiated by all the AD users, out of that top five countries Australia, US, EU, Mexico and Canada which initiated 75

per cent of the AD cases and if we consider top ten countries it goes up to 92 per cent. Surprisingly, India, South Korea, South Africa and Thailand do not find a place in top ten users. The share of top five countries came down to nearly 32 per cent in the period 1995-2014. This has not happened because the traditional users have reduced their use of AD measures but the use by many new users has increased significantly. So the composition of the most active users has changed historically over a period of time. There were five developing countries in the list of top ten countries during 1990-94, whereas there are now six of them in the top ten in the period 1995-2012. The sixth developing country is India which was not among the top ten clubs earlier. Furthermore, the share of developing countries in the overall initiation figures in the top ten has changed significantly. Developing countries accounted for only 25 per cent of all initiations during 1990-1994, whereas their share increased to 58 per cent during 1995-2014 out of which 43 per cent is contributed by top six developing countries and remaining 15 per cent by all other developing countries.

India did not initiate any investigation in 1990, 1991 and 1993. It initiated eight investigations in 1992 and seven in 1994, bringing its total initiations to 15 during 1990-1994. It stands at 1 per cent of all initiations. Still it has evolved as a top user of AD measures during 1995 to 2014 with nearly 16 per cent of the total initiations. South Africa increased its share in initiations from 1 per cent in 1990-1994 to 4.81 per cent in 1995-2014.

The shares of US and EU were 21 and 15 per cent respectively during 1990-94 which have come down to 11 and 10 per cent respectively. The share of Argentina has increased from 4.8 to 6.7 per cent and Brazil from 4 to 7.76 per cent.

All the cases initiated till 1985 were initiated by OECD countries. After that Mexico joined the antidumping club as a major user. Other Latin American countries followed it in the early nineties. Lower middle and lower income countries started using antidumping significantly by the late nineties.

Only four countries reported antidumping initiations in 1980 which increased to ten in nineties. Till 2000, 41 countries reported initiations out of which six were OECD, five non-OECD developed countries and rest developing countries. By 2010 the number of AD users increased to 48. But surprisingly there was no change in the number of traditional users and seven more developing countries started new investigations.

The distribution of antidumping user countries has been highly skewed. In all, only twelve countries use it very actively. These countries account for almost 80 per cent of the total initiations occurred during 1995-2014. The four traditional users of antidumping namely Australia, Canada, EU and United States which accounted for 64 per cent during 1990-1995, still account for 31 per cent of the total initiations. These four countries account for almost 90 per cent of the total initiations by OECD countries during 1995-2014.

Although the traditional user's share in total initiations has come down to 32 per cent, it is still high because these are only five countries which contribute one-third of initiations out of 48 countries. That means the rest of 43 countries together contribute 68 per cent initiations. In the category of new users, top six countries contribute 2001 (62 per cent) initiations out of 3220 initiations. These six new users initiated 42 per cent of the total world initiations.

Thus the surge in antidumping cases was fuelled by the developing countries in the late 1990s although the use of antidumping mechanism was still not widespread among these countries (Aggarwal 2003). According to an estimate (Zanardi 2004), around forty developing countries have not initiated investigations even though they have an AD law. Vermulst (2005) notes that complex methodology related to the calculation of dumping and injury margins, as well as the detailed procedural compliance that the authorities need before taking an antidumping action make the use of AD laws difficult to apply and understand in practice.

The sector-wise analysis of antidumping initiations by major users is based on the Harmonized System (HS) codes used internationally. As per this classification there are twenty-one chapters classified/ group. To identify most frequently named sectors, top ten sectors are selected for the analysis. They have been arranged in a descending order. The highest numbers of cases have been initiated in the sector of base metals and articles thereof (XV). Out of 4757 initiations, 1379 cases have been initiated in it which accounts for 29 per cent. The second most targeted sector is chemical and allied industries, almost 20 per cent cases were initiated during 1995-2014 in it. The reason for the concentration AD cases in these sectors is that the world markets for steel, base chemicals and plastics are highly cyclical and therefore at the bottom of a cycle, firms operating in these markets may turn to pricing sales below cost (Miranda et al. 1998).

India is a major player in filing the antidumping cases followed by US and EU respectively. India filed 44 per cent of its cases in the chemical industries whereas US filed 54 per cent of its cases in base metals. We further note a trend between developing and developed nations while filing the cases. Developing countries mostly file the cases into chemical or allied industries (VI) and plastic and rubbers (VII) whereas, developed countries file most of the cases in the steel industry (XV).

Overall, as in the case of initiations, the number of users of anti-dumping measures went up significantly after the inception of WTO, compared with the period during 1990-1994. The share of the ten most active users declined to 76 per cent in 1995-2012 from 97 per cent in 1990-1994. Secondly, the composition of the active users also changed. The number of developing countries among top ten has increased from five to six. Even in the case of impositions, the share of developing countries in total impositions has risen significantly. Developing countries accounted for 49 per cent of all impositions during 1995-2012 whereas they accounted for 18 per cent only during 1990-1994. They have emerged as the main users of these measures in the post-WTO period.

Similarly, in sector-wise analysis of anti-dumping measures most of the cases were filed in the textiles (XI), Plastics and rubber (VII), Chemical and allied industries (VI), Textiles (XI) and machinery (XVI). Total number of cases filed in these top five sectors contributed around 85 per cent of the top ten sectors. In base Metal sector (XV) 32 per cent of the cases were filed out of top ten sectors. Only the percentage of filing in the top five sectors has increased marginally due to introduction of the WTO. Most of the cases were in the year 2000, 2002 and 2003.

After the emergence of WTO, China remains on the radar of reporting countries in the imposition of dumping duties. Around 25 per cent of duties were imposed only on China from 1995 to 2014. This shows the aggressive policies implemented by the Chinese government to increase the export. Most of the dumping duties were imposed during 2000, 2002 and 2003.

Chapter - IV

National AD legislations: Critical Survey of DSB Rulings

4.1 Introduction

The principal objective of the multilateralism or the WTO regime has been to liberalize trade among the nations by globalizing their economies. In view of this the member countries are expected to reduce tariffs and eliminate quantitative restrictions on imports and thus allow free flow of goods among them. Thus, tariffs and cross border treatment are predictable and uniform for all the members. Every member is required to be given the Most Favoured Nation (MFN) treatment as per the WTO agreements. Tariffs on industrial products in the developed countries have been brought down and it has also been ensured that no restrictions other than duties, taxes or other charges are made. The Uruguay Round has ensured free market access to the members. A new era of rule-bound trade has set in areas where the absence of international consensus and workable rules and procedures had frequently given rise to trade disputes which threatened to erode the multilateral trading system (Gupta 2003).

The liberalized and globalized trading system has posed new challenges before the governments and domestic producers, especially in the developing world. Domestic producers face stiff competition from the relatively efficient world where they are in position to sell the produce at cheaper rates. This has posed a threat to the very survival of relatively less efficient producers in the developing countries. The governments have found ways and means to protect their domestic producers, while remaining within the WTO and complying with the rules.

The trade protection measures, i.e., Agreement on Implementation of Article VI of GATT 1994 (The Agreement on Antidumping), Agreement on Subsidies and Countervailing measures and Agreement on Safeguards were in fact designed to encourage Members to open up their markets. In case of a threat of material injuries to domestic producers, these agreements will protect them from the injury by taking appropriate protective measures.

Thus these agreements have played an important role in opening up the markets all over the globe. They have often been used by the member countries to protect their domestic industries from the unfair trade practices by exporters. The agreement on antidumping is the most frequently used agreement among the three. The reason for the popularity and rampant use of these agreements is that they are selective and discriminatory.

The WTO agreements as exceptional measures, depending upon the situation, permit product specific imposition of antidumping duty, countervailing duty and / or safeguard duty as the case may be¹. These three exceptional duties are meant for three different mutually exclusive situations. These duties are not anti-competitive, rather they are imposed to encourage competition and provide a level playing field to domestic industries. Antidumping duty and countervailing duty are specially designed to remove the effects of unfair trade practices.

The present antidumping regime is governed by WTO laws set out in Article VI of the GATT, 1994 and in the WTO agreement on Implementation of Article VI of the GATT, 1994 (popularly known as “Agreement on Antidumping”). The history of evolution of antidumping legislation is provided in details in the earlier chapter. It dates back to the early twentieth century. Canada was the first country to enact antidumping law in 1904 and was followed by the U.S., European countries and Australia. In the postwar period, GATT provisions recognized the need for antidumping measures and provided the basic guidelines for the enactment of such an antidumping law. In the early phase of GATT negotiations, after the US’s insistence, Article VI was included as a basic framework for member countries to respond to dumping. In the years following its negotiations, Article VI by itself proved to be inadequate in dealing with dumping issue because the Article was vague and interpreted and applied in an inconsistent manner. Many contracting parties felt that it was applied in such a way that it effectively raised a new trade barrier (J. Jackson 1997). Nevertheless, Article stands as a foundation of today’s antidumping regime. Its inadequacies were discussed and deliberated in the later GATT rounds of multilateral trade negotiations. It was achieved in 1967 by the Kennedy round of

¹ Antidumping duty (ADD) is imposed on the dumped imports causing material injury and Countervailing duty (CVD) is imposed in case of subsidized exports causing injury to the domestic producers, whereas Safeguard measures are imposed in the case of a sudden surge in the imports of the some products.

antidumping code, which was again discussed and replaced by the Tokyo antidumping code, 1979. However, in spite of the clarification of the Article by the Tokyo round, there were even more criticisms of the antidumping regime in the eighties. There was a proliferation of antidumping activities, and developed countries were at the leading positions and developing countries were targeted. This resulted in the polarization of the negotiating parties and, therefore, it was one of the most controversial issues at the Uruguay round of negotiations. Finally, a compromise was reflected the WTO antidumping agreement which together with the Article VI of the GATT, 1994 sets out the present rules of dumping and antidumping measures.

Since then, antidumping protection is being debated and criticized by both economists and legal experts. Many are of the view that these antidumping provisions are designed to misuse. Studies of Dale (1980), Bhagwati (1988) Finger (1993), Messerlin (1990), McGee and Block (1997) concluded that the administered/contingent protection provisions are biased and being misused by protectionists Finger (1993) states that “AD is the fox put in charge of the hen house, trade- restrictions justified by GATT. The fox is clever enough not only to eat the hens but also to convince the farmer that it is the only way things ought to be.”

The GATT/WTO code has undergone significant revisions at every negotiating round. Individual countries, especially the US and EU, frequently amended their AD statutes, almost always to make AD protection easier to grant. Not only does AD law allow politicians to offer politically preferred industries protection without blatantly violating GATT/ WTO principles, they can also tinker with the rules to broaden the scope and availability of AD protection (Blonigen and Prusa 2001).

As shown in the study of Bown (2009), the member-countries have become more active in using trade remedy measures, particularly in the wake of the global economic crisis.

Presumably, these governments have responded to domestic protectionist pressure by imposing import restrictions during global economic crisis as demonstrated by Evans and Sherlund (2006).

A recent study by UNCTAD showed that 40 per cent of the sample countries experienced rapid expansion of export of manufactured goods, while half the sample (mostly low income countries) faced deindustrialization. Deindustrialization and slow growth of exports had been accompanied by vulnerability of manufacturing sector of the economy (Aggarwal, 2005).

Suggestions by WTO Appellate Body are

“If the WTO laws were not to offer a safety valve for situations in which, following trade liberalization, imports increase so as to cause serious injury or the threat thereof to domestic industries, member could be deterred from entering into additional tariff concessions and from engaging in further trade liberalization. It is for this reason that the safeguard mechanism in Article XIX has always been an integral part of the GATT²

On the empirical level it has been shown that countries issuing laws liberalizing their trade often issue antidumping laws meaning that trade liberalization and antidumping laws go hand in hand (Jeremy Kempton 1999).

Zanardi (2006) has shown that Argentina, Brazil, India, South Africa and Turkey are among the most frequent worldwide users of antidumping, with annual caseloads in the same order of magnitude, and sometime higher, as the European Union and US in terms of intensity. Even more troubling is that the increased use of antidumping by developing countries has a disproportionate impact on other low-income countries. In particular, data collected for this study shows that the developing countries target other developing countries in about 60 per cent of their antidumping cases.

Here, an attempt has been made to throw light on the legal issues related to antidumping. This has been done in three ways. The first section deals with the descriptive analysis of the DSB consultations. The present antidumping laws and procedures have been subjected to criticism on many fronts. Therefore it is imperative to find out the points of contentions in the whole legal system of the antidumping laws. Thus, in the second section consistencies of the domestic antidumping legislations of the WTO members

² Paragraph 7.77, Panel Report WT/ DS177/R, WT/ DS 178/R 2000.

have been compared with the WTO antidumping legal provisions. Thus, this section throws light on the flaws in the antidumping laws of WTO as well as the incompatibilities of domestic AD legislations of the major users with the WTO laws and their misuse by users. The last part of the chapter is about the application of Article VI of the GATT, 1994 and WTO agreement on Antidumping by the member-countries and evidence of ADA violations by them from the analysis of DSB Panel Reports and Appellate Body (AB) rulings. The last part is about the suggestions and reforms in the antidumping laws and legislations of the member countries.

There are a large number of studies on legal aspects of antidumping practices. But there is no comprehensive study based on the analysis of DSB consultations citing the ADA. There are till now 113 consultations sought by the members of WTO out of which in 30 cases the reports have been adopted. This study attempts to analyze these reports to gather evidence of misuse of the AD provisions of WTO.

4.2 Methodology of the Analysis

The data used in this chapter is taken from secondary sources. Since it deals with the legal aspect of antidumping, it uses many legal records such as the domestic legislations of the member-countries and their Investigation Authorities reports, DSB Panel Reports, WTO case laws etc. Other descriptive statistics have been taken from the WTO website along with the previous theoretical and empirical studies. Thus to compare the inconsistencies of the domestic antidumping legislation with WTO agreement and its misuse by the member, evidence has been gathered from DSB panel reports. It is the basic source of information.

4.3 WTO Antidumping Provisions

The antidumping actions are contingent protection measures permitted under WTO rules. All the WTO agreements are based on three fundamental principles of GATT, i.e., progressive trade liberalization, non-discrimination between members and reciprocity³. The exceptional arrangements which depart from the fundamental principles of WTO are

³ The whole process of multilateral negotiations has been fundamentally guided by these principles.

termed as ‘contingent protection measures’⁴. They are based on the realization that openness might make economies vulnerable to injury due to adverse trade shocks. These provisions fall under two categories; i) measures that ensure remedies against unfair trade and ii) measures that provide remedies against surge of imports. Within the WTO framework, contingent protection is taken to mean the safeguard measures which are a remedy against increase in imports and antidumping measures and countervailing measures address the issue of unfair trade (.....)?

The agreement on implementation of Article VI of GATT, 1994 popularly known as the WTO Agreement on Antidumping allows member-countries to act against dumping when there is a material injury to the competing domestic industry. Typically antidumping action means charging extra import duty on the particular dumped product from the particular exporting country in order to bring prices closer to the ‘normal value’ to remove the injury to domestic industry in the importing country. All the contracting parties of the agreement are expected to designate the antidumping authority in each country as we have DGAD in India⁵. Local producers having objections on foreign suppliers are expected to file case for AD action against dumping firms. The designated authorities conduct investigations in the matter as per the domestic AD legislations which are assumed to be consistent with WTO agreement. In the whole process of investigation foreign firms are to be given a chance to explain their position. Then the dumping authority determines the dumping margin if the export price is less than the normal value. As per the WTO agreement the “normal value”⁶ of the product is calculated through three methodologies, i.e., either price in the exporters’ domestic market or price charged by the exporter in another country or a ‘constructed normal value’ which is calculated on the basis of combination of the exporter’s production costs, other expenses and normal profit margins. In case of absence of information on the exporter’s domestic market price, other two methodologies can be applied. Calculating the extent of dumping margin of the product alone does not suffice to impose the antidumping duty as there has to be causal

⁴ Contingent protection measures are the provisions to protect domestic producers from the unfair trade and sudden surge in the imports of particular goods. These measures are antidumping duty, countervailing duty and safeguard measures.

⁵ Director General of Antidumping and allied duties is the designated authority to conduct the investigation in India.

⁶ See the Article 2.1 of the antidumping agreement.

link between the dumping margin and material injury. Once the causal link is established, antidumping duty may be imposed up to the extent of the dumping margin. Where countries are follow the lesser duty principle (which states that duty imposed should be less than the dumping margin) it is then discretion. However, the antidumping investigation comes to a halt if (i) the dumping margin is insignificant (defined as less than 2% of the export price), and (ii) the volume of imports from any one country is less than 3% of the total imports. But if investigation is conducted against many countries and if they all contribute to more than 7% of the imports, even if each country contributes only less than 3%, the investigation proceeds. AD agreement has a provision of sunset clause under which the antidumping measures can be imposed only for five years. It can be reviewed after five years and, if needed, may be extended for another five years if new investigations prove that it is injurious to the domestic industry.

4.4 Domestic AD Laws and Practices of Selected Countries

Every WTO member-country is supposed to bring out the domestic antidumping legislation according to the set of rules provided in Article VI of GATT and the WTO Agreement. In a way agreement on antidumping constitute the basic guidelines for domestic antidumping policies and each member-country has to adhere to it. But, as discussed above, WTO guidelines are vague and can be interpreted as per each country's domestic legislation. So it is not very surprising that there are significant variations among the AD statues and laws of member-countries. Most of the countries delegate AD investigations to an independent government agency so that it is free from political pressure and executive authorities. However even where an investigative agency is independent, it is often under political pressure (Blonigen and Prusa, 2001).

Jurisdiction of two key determinations is either bifurcated or unified. Countries like the US and Canada authorize one agency to handle dumping determination and another to handle injury determination. The EU and Australia, on the other hand, have a single agency to make both determinations. An argument in favor of the bifurcated approach is that the outcome is more objective since two mutually independent agencies affirm the allegation. The unified approach by contrast minimizes resources and avoids conflicting judgments. Either system can result in biased decision, if the agencies are not independent of domestic pressure.

Transparency varies substantially across countries and seems to be a problem for new users. Many new users do not provide explanation of their calculations and methods underlying their determinations. Confidential business information (e.g., firm specific pricing and volume shipments, identity of purchasers etc.) is almost always collected by the government agencies conducting the investigations. However, not all countries give interested parties access to this data. For instance, under EU and Australian law, only the investigating authorities have access to all pertinent information, while interested parties get only a summary description (Jackson and Vermulst, 1989). By contrast under the US and Canadian law legal counsels (but not the parties themselves) have access to all confidential information. Price undertakings (agreements to revise prices in lieu of a formal judgment) are common in the EU and Australia, but less frequently used in the US and Canada.

Most users begin collecting AD duties after a preliminary injury determination. In fact, until the Uruguay Round the agreement mandated that duties were not collected for at least 60 days, some new users collected AD duties within a few days after the petition was accepted. Using the US industry-level data, Staiger and Wolak (1994) show that the value of preliminary relief may be sufficient to make filing a profitable strategy. That is, the fall in trade during the investigation period alone can substantially benefit the domestic industry, giving incentives for case filings even if a final affirmative decision is unlikely.

Countries like the US and Canada mandate that the full AD duty be imposed and collected. Other countries such as Australia and the EU require that the AD duty be lower than the dumping margin if lesser duties would be sufficient to remove the injury caused by dumping. The 'full duty' rule and affirmative dumping determination often leads to the complete cessation of imports from the subject countries (Blonigen and Prusa, 2001). A country like China which is a non-market economy gets trapped due to the absence of domestic market price. Therefore, we find maximum numbers of antidumping actions initiated against China under the WTO regime. Because of the absence of domestic market price, the normal value of exports from China is constructed on the basis of 'best available information' provided by domestic producers in the importing countries or on the basis of the costs and prices of a third comparable country. Earlier studies by Finger,

Dale and McGee and Block have elaborated a number of cases to show how imports from East European non-market economies were subjected to antidumping action with repeated regularity.

Depreciation in the value of currency also plays an important role in starting an AD investigation. McGee and Block (1997) and Palmetier (1988) found that the countries may face AD initiations if there is sudden and large scale depreciation in the value of currency. At the same time countries with the hyper- inflation gets affected due to over estimation of normal value and consequently dumping margin.

In the U.S., administration of the antidumping law is entirely divorced from the supposed theoretical justifications articulated by its defenders. Furthermore, it is fraught with methodological distortions that routinely exaggerate and even fabricate dumping margins. The result is to cripple normal and healthy import competition and injure downstream industries and consumers. Possibly the most egregious distortion is the practice known as “zeroing”. Its application is a significant cause of the systematic overestimation of dumping margins and subsequent application of inflated antidumping duties (Ikenson, 2004). A WTO dispute settlement body panel on April 13, 2004 ruled against the U.S. practice of zeroing in a case brought by Canada involving softwood lumber. It found that “the United States has violated article 2.4.2 of the AD agreement by not taking into account all comparable export transactions when DOC calculated the overall margin of dumping. There are several instances where it has ruled against the US DOC’s practice of zeroing. Details of these cases have been discussed in the last section of the chapter.

McGee and Block (1997) criticized the US investigative authority through his study, for comparing apples to oranges. Similarly, they have pointed out how the exporters have been bullied by administrative complexities. Another major problem with the AD procedures is the enormous administrative and legal costs. Domestic producers virtually do not face any penalty even if the case is rejected or it turns out to be frivolous. This encourages them to take multiple courses of action.

Most of the controversies surrounding antidumping policy centre the legal interpretation of the rules of the antidumping legislation of the concerned country and the Antidumping Agreement of the WTO. It is, therefore, imperative to examine the existing rules to see how the policy works and to determine its significance as a form of trade policy intervention. Finally, since antidumping policy was a major issue on the agenda of the Uruguay Round, the changes agreed upon during it must be discussed.

The antidumping measures used by the WTO members are expected to be compatible with the WTO's antidumping agreement. But there are many instances when the members have violated the agreement. Therefore, the issue of incompatibility of domestic AD legislation is a debated issue in the trade policy literature. The very purpose of the WTO agreement is to provide and ensure the contingent protection against the unfair trade practices and not to provide trade restricting instrument. There are several instances where it has been observed by the DSB Panel that the agreement has been violated and misused by the members. Irwin (2002) note that antidumping is simply a popular means by which domestic firms can stifle foreign competition under the pretense of fair trade. Many studies have noted that there exist several loopholes in the provisions through which a country can practice AD measures as a protectionist mechanism (Banik, 1998; Debroy and Banik, 2000; Aggarwal). Thus, this kind of illicit practices prompted the necessity to reform the WTO Agreement (Lindsey and Ikenson, 2002; Raju, 2004).

Finger and Nogues (2005) provide evidence consistent with the safety valve argument. They found that broadly trade liberalization was advanced by the careful management of antidumping procedures. Destler (1996) has pointed out a potential benefit of AD measures. He argues that antidumping rules are a useful 'safety valve' by which protectionist pressure can be reduced on a narrow range of products even as government reduces trade barriers across the economy as a whole.

Each WTO member is supposed to bring up its national legislation to implement the antidumping policy in accordance with the general guidelines specified by the GATT/WTO antidumping agreement. Since the WTO guidelines are vague and ambiguous, the member-countries have interpreted then according to their convenience and the same has been incorporated in their domestic legislations. Therefore, there have been substantial variations among the antidumping legislations of the member-countries.

The following discussion offers a brief summary of some key similarities and differences among the selected countries. Though the discussion is not limited to any particular country, the focus shall be on few major countries. As fifty per cent of the DSB cases are against the US followed by EU and China, the focus shall be on them and India.

4.5 DSB's Cases Citing Antidumping Agreement

In this section, the requests (cases) submitted for consultation to resolve the disputes regarding the implementation of Article VI of GATT 1994 (agreement on antidumping) have been analyzed. There are 116 cases or requests for the consultation submitted to the DSB of the WTO which cites Antidumping Agreement.

A dispute arises when a member-country believes that another member country is violating the agreement. The complaining member submits a 'request for consultation' after identifying the agreement/s it believes is being violated. A dispute can be and more often brought under more than one agreement (WTO website).

Table 4.1 provides details of the present status of the consultations filed so far. Out of 116 cases, 43 are still in consultations and in seven cases panel has been composed. Fourteen cases have been either terminated to settle mutually by the complainants and respondents. Only in 18 cases the report has been adopted by the DSB and 20 cases implementation has been notified by the respondent countries. In three cases the DSB has granted authorization to retaliate and in the three cases compliance proceedings completed by the respondents.

Table 4.1 : Present Status of Cases File at DSB for Consultation	
Number of cases	Status (present stage)
43	In consultation
7	Panel composed
4	Panel not yet composed
1	Panel report under appeal
1	Panel report circulated
18	Report adopted
14	Settled or Terminated
20	Implementation notified by the respondent
2	Authority for panel lapsed
3	Authorization to retaliate granted
3	Compliance proceedings completed

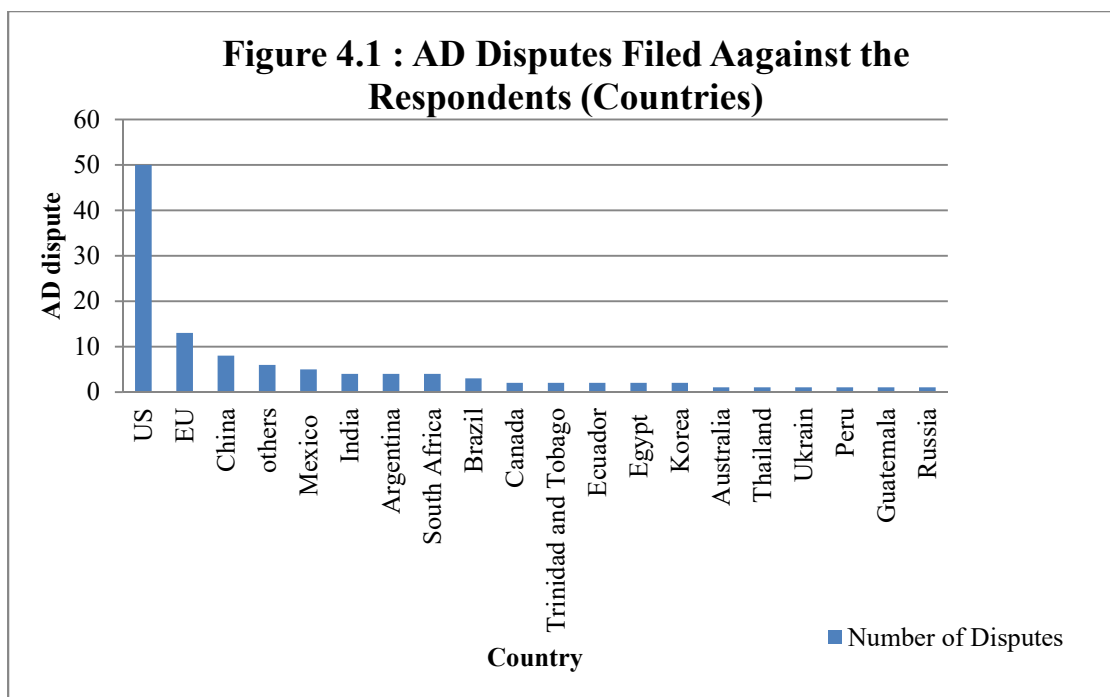
Source: www.wto.org

As far as India is concerned, till date it has filed 22 cases for consultation at DSB, out of which only eight cite antidumping agreement. There are 23 cases against India as a respondent and only in four cases of antidumping it is involved as respondent. It is involved in 116 cases as the third party out of that 19 are antidumping.

Table 4.2 : India's Involvement in the DSB Cases			
Sr. No.	Role	Total Cases	AD Cases
1	As a complainant	22	8
2	As a respondent	23	4
3	As third part	116	19
Source: www.wto.org			

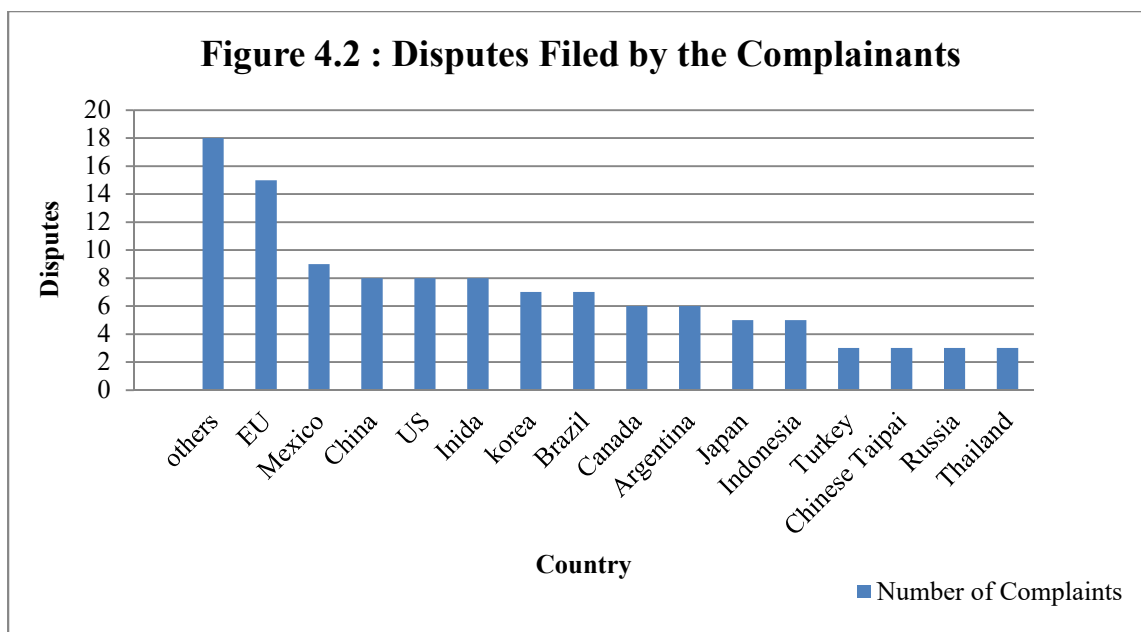
Complainants have been filing cases at DSB with allegations that the respondents have misused the contingent protection measure, especially antidumping agreement. So it is imperative to know what the allegations are and what the actual violations of the provisions are. At the same time, we must also know who the complainants and respondents are.

Figures 4.1 and 4.2 offer details about the respondents and complainants of the cases filed at DSB. As it is obvious from Figure 4.1, almost 50 per cent cases have been filed against US alone. European Union faces the second highest cases with 13 disputes. The US and EU together face over 60 per cent of the total disputes as respondents. As far as developing countries are concerned, China, Mexico and India face 9, 7, and 4 cases respectively. All the developed countries together face more than 70 per cent disputes at the DSB and therefore prima facie it looks like the developed countries use these provisions against the developing countries.



Source: www.wto.org

Figure 4.2 depicts the complaints filed by the complainants (countries). The maximum number of disputes has been raised by the EU. So far, it has filed 15 disputes of which maximum are against the US. All the developed countries including US, Korea, Japan and Canada have filed 40 per cent of the cases. But developing countries have file 60 per cent of the cases. The top complainants are Mexico, China, India, Brazil and Argentina. They have raised 35 per cent of the disputes. Developing countries and especially India have initiated maximum number of AD initiations but there are only four complaints against India.US alone faces almost 50 per cent of the complaints thus the developing world has a feeling that the developed countries, particularly US and EU, have misused the contingent protection measures especially the AD measures.

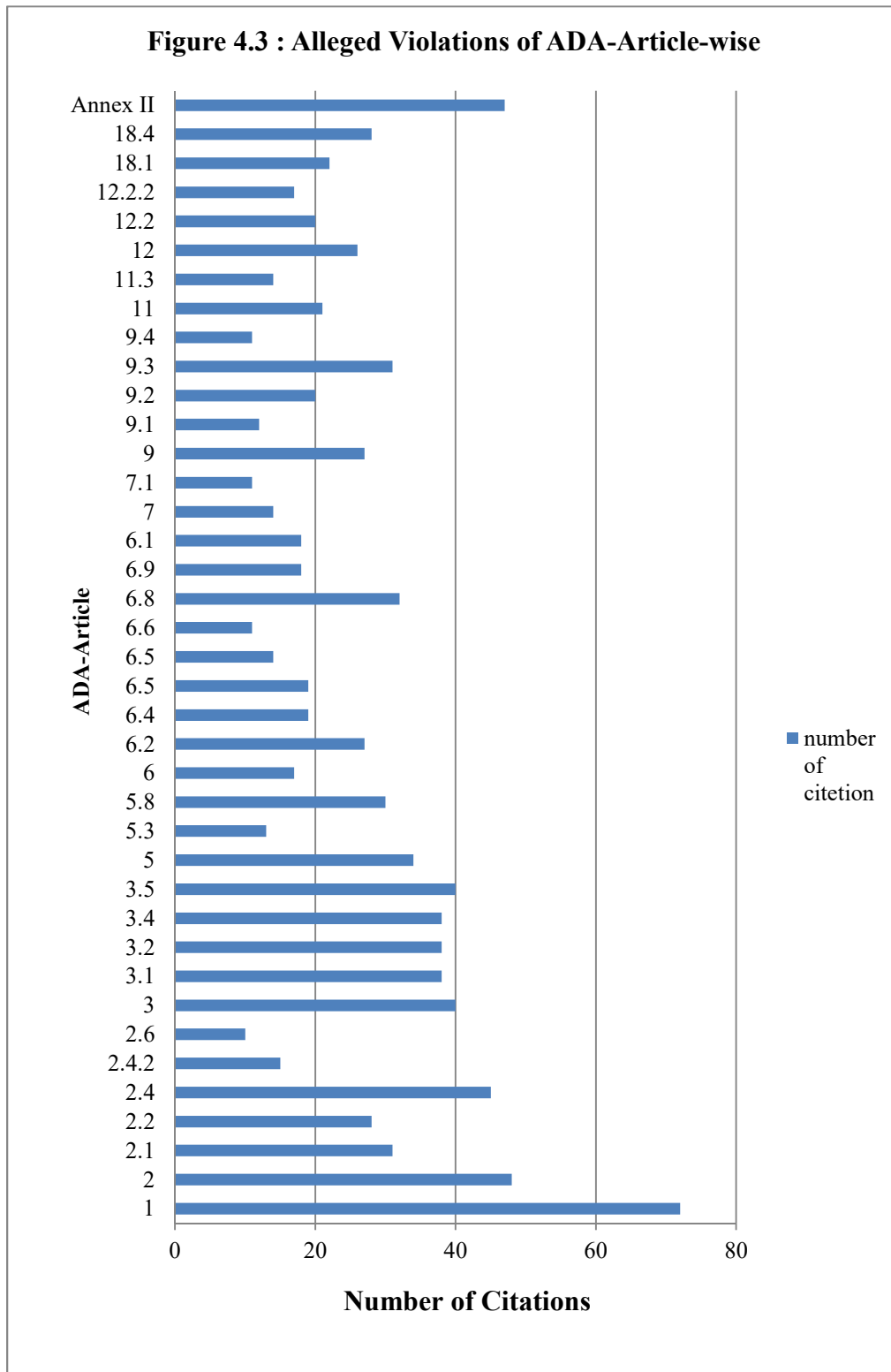


Source: www.wto.org

Figure 4.3 depicts details of the allegations raised by the complainants by citing various articles of the ADA. Most allegations are centred on few articles such as 2, 3, 5, 6, 9, 12, 18 and Annex II. These articles are about the dumping determination (Art. 2), injury determination (Art. 3), initiation and investigation procedures (Art. 5), evidence collection (Art. 6, annex II) and duty imposition (Art. 9).

The maximum numbers of disputes have been raised alleging the violation of Art.1, which defines the principle of an agreement. That simply means the principles and spirit of the agreement have been ignored by the respondents. But this agreement is vague and therefore no violations can be proved. Besides the articles 1, 2 and 3 have been cited extensively by the complainants. These articles deal with the most disputed part of the agreement i.e. determination of dumping and determination of injury margins. The high incidence of DSB cases in these categories reveals the potential of mishandling of cases on these grounds, which almost covers the methodological and procedural part of the

agreement.



Source: www.wto.org

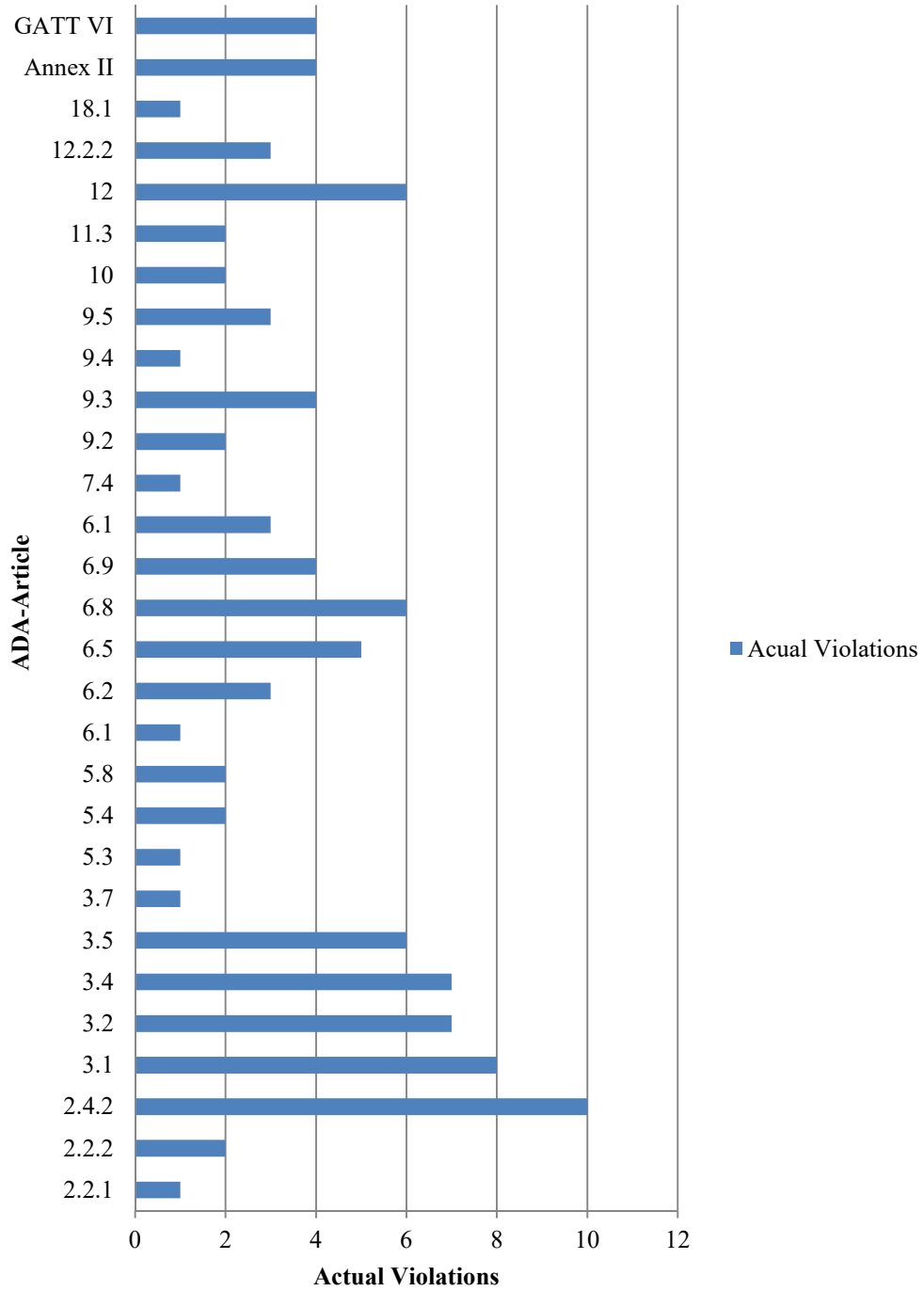
We know the allegations made by the complainants. The actual violations of ADA by the respondents have been summarized in Figure 4.3. These incidences of violations have been compiled from the DSB panel reports and appellate body rulings. These incidences have been called as inconsistent or incompatible with WTO agreement by the panel or appellate body. In case the panel report has been challenged by either of the parties, it is referred to the appellate body which may reject or upheld the panel's findings. The observations can be briefly summarized as follows.

Article 2.4 is the most frequently violated article of the ADA. Use of this article by US has been declared by WTO is inconsistent. The US has followed a flawed methodology called "Zeroing". This a practice of calculating the average dumping margin where the negative dumping margins are counted as zero which artificially inflates the average dumping margin. Therefore, it increases the injury margin and consequently the duty imposed also gets inflated. The same methodology has been used by the EU's investigating authorities.

Articles 3.2, 3.3 and 3.4 are the next most frequently violated sub-articles of Article 3 As a whole it deals with the existence of dumping, threat of injury to the domestic industry and finding the causal link between dumping and the injury. Therefore, this article has special importance in the process of investigation. If we include the violations of all sub-articles it has been violated the most.

The Figure below shows that the Article 6 has also been violated many times by the respondents. The DSB panel has called its use as inconsistent with WTO agreement. Sub-article 6.8 has been most cited and violated sub-article. It identifies the circumstances in which investigating authorities may overcome a lack of information in response of the interested parties / complainants by using facts which are otherwise available to the investigating authorities.

Figure 4.4 : Actual Violations of ADA-Article wise



Source: www.wto.org

4.6 DSB Panel Report: Alleged and Actual Violations of AD Provisions by Respondents

The focus here is on the consultations where the implementation of the report has already been notified by the respondent or panel report circulated and panel report adopted. There are around 30 cases where either the report has been circulated or adopted. A majority of the cases are still in consultation and have not been considered in the present analysis. The observations from the decisions of DSB panel and Appellate Body have been analyzed article-wise. Most disputes are centred on few articles of the antidumping agreement. Therefore the focus has been on the major issues where the disputes have arisen. We know that consultations have been sought by the complainant by mostly cite Articles 1, 2, 3, 5, 6, 9, 12 and 18 and annexure II. Therefore, the present discussion has been confined to these articles and issues related to them. Its basic objective is to find inconsistencies, if any, in the domestic legislations and/or misuse of the antidumping provisions on the basis of the panel reports.

Table 4.3 below displays the information related to the DSB cases and articles allegedly violated and articles actually violated.

Table 4.3 : Details of the Disputes Under Consideration

Dispute number	Respondent	Complainant	Alleged violations	Actual Violations	Present status
DS122	Thailand	Poland	ADA Arts. 2, 3, 5 and 17.6	3.4	Adopted
DS132	Mexico	United States	ADA Art. 3, 5,6,7,10 and 12	3.1, 3.4, 3.7, 7.4, 10.2, 10.4,12	Adopted
DS141	European Community	India	ADA Art. 2, 3, 5, 12 and 15	2.4.2, 2.2.2, 3.1, 3.2, 3.4	Adopted
DS189	Argentina	European Community	ADA Art. 2 and 6	2.4, 6.8, 6.9, 6.10	Adopted
DS211	Egypt	Turkey	ADA Art. 2, 3, 6	3.4, 6.8, Annex II(6)	Adopted
DS217 and DS234	United States	Australia, Brazil, EC, India, Indonesia, Japan, Korea, Thailand, Canada and Mexico	ADA Art. 5 , 18	5.4, 18.1	Adopted
DS241	Argentina	Brazil	ADA Art. 2, 3, 5, 6	2.4, 2.4.2, 3.1, 3.2, 3.4, 3.5, 5.3, 5.8	Adopted
DS295	Mexico	United States	ADA Art. 3, 5.8, 6, 9, 11, 12	3.1, 3.2, 3.4, 3.5, 5.8, 6.1, 12.1, Annex II (7)	Adopted
DS312	Korea	Indonesia	ADA Art. 1, 2, 6, Annex II, GATT VI	6.2, 6.7, 6.8, Annex II(7)	Adopted
DS322	United States	Japan	ADA Art. 2, 9, 11 GATT VI	2.1, 2.4, 2.4.2, 9.3, 9.5 11.3, GATT VI:2	Adopted by the DSB
DS322	United States	Japan	ADA Art. 2.4, 2.4.2, 9.3, 9.5 , 11.3 GATT VI:2	2.1, 2.4, 2.4.2, 9.3, 9.5 11.3, GATT VI:2	Adopted
DS331	Mexico	Guatemala	ADA Art. 1, 2.1, 2.2, 2.4, 2.6, 3.1, 3.2, 3.4, 3.5, 3.6, 3.7, 4.1, 5.2, 5.3, 5.4, 5.8, 5.10, 6.2, 6.4, 6.5, 6.7, 6.8, 6.9, 6.13, 9.1, 9.3, 12.1, 12.2, 18.1 Annex II, 2.1, 2.4, 2.4.2, 9.3, 9.5 11.3, GATT VI	3.1, 3.2, 3.4, 3.5, 5.3, 5.8	Adopted
DS335	United States	Ecuador	ADA Art.2.4.2	2.4.2	Adopted
DS337	EC	Norway	ADA Art. 2, 3, 4, 5.4, 6.8, 6.9, 6.10, 9.2, 9.3, , 12.2.2, 9.4, Annex II 1,3,6	3.1, 3.2, 3.5, 5.4, 6.4, 9.2, 9.4	Adopted
DS343, DS345	United States	Thailand, India	ADA Art. 18.1, GATT VI:2,3	18.1, GATT VI:2,3	Adopted
DS350	United States	EC	ADA Art. 2.4.2, 9.3, 11.3, 17.6, GATT VI:2	9.3, 11.3, GATT VI:2	Adopted
DS383	United States	Thailand,	ADA Art.2.4.2, DSU Art. 19.1	2.4.2, DSU Art. 19.2	Adopted
DS397	EU	China	ADA Art.2.4, 4.1, 6.2, 6.4, 6.5, 6.10, 9.2	4.1, 6.2, 6.4, 6.5, 6.10, 9.2	Adopted
DS402	United States	Korea	ADA Art. 2.4.2	2.4.2	Adopted
DS	United States	Viet Nam	ADA Art. 2.1, 2.4, 2.4.2, 6.10, 6.10.2, 9.3, 9.4, 11.1, 11.3, 17.6, GATT VI:2	2.4, 2.4.2, 6.8, 6.10, 9.3, 9.4, GATT VI:2	Adopted
DS405	EU	China	ADA Art.2.2, 6.5, 6.10, 9.2, 18.4, GATT I	2.2.2, 6.5, 6.5.1, 9.5	Adopted
DS414	China	United States	ADA Art. 1, 3.2 3.2, 3.5, 6.5.1, 6.8, 6.9, 12.2, 12.2.2, Annex II	6.5, 6.9, 12.2, 12.2.2	Adopted
DS422	United States	China	ADA Art. 2.4.2	2.4.2	Adopted
DS425	China	EU	ADA Art. 3.1, 3.2, 3.4, 3.5, 6.5.1, 6.9, 12.2.2	3.1, 3.2, 3.4, 3.5, 6.5.1, 6.9, 12.2.2	Adopted
DS427	China	United States	ADA Art. 2.2.1, 3.1, 3.2, 3.4, 3.5, 4.1, 4.2, 6.2, 6.5.1, 6.8, 6.9, 12.2, 12.2.2	6.2, 6.5.1, 6.9, 2.2.1, 12.2.2, 6.8, 12.7, 3.1/15.1, 3.2/15.2	Adopted
DS440	China	United States	ADA Art. 1, 3.1, 3.2, 3.4, 3.5, 4.1, 5.3, 5.4, 6.2, 6.5.1, 6.8, 6.9, Annex II	3.1, 3.2, 3.5, 6.5.1, 6.8, 6.9, Annex II	Adopted

Source: www.wto.org

1. Article 1- Principles

“An anti-dumping measure shall be applied only under the circumstances provided for in Article VI of GATT 1994 and pursuant to investigations initiated and conducted in accordance with the provisions of this Agreement. The following provisions govern the application of Article VI of GATT 1994 in so far as action is taken under anti-dumping legislation or regulations” (ADA article 1)

Article 1 of ADA does not include any procedure or methodological issue. It merely states the principles on which the whole agreement is based. As per the agreement’s article 1, “An antidumping measure shall be applied only under the circumstances provided for in Article VI of GATT, 1994 and pursuant to investigations initiated⁷ and conducted in accordance with the provisions of this agreement. The following provisions govern the application of Article VI of GATT 1994 in so far as action is taken under antidumping legislation regulation” (Article 1 of ADA). Many complainant members have alleged violation of Article 1 by the respondent members. But it is vague and therefore its consistency or inconsistency cannot be ascertained.

2. Article 2- Determinations of Dumping

This article basically deals with the determination of dumping. The subsections of the article have been devoted to different parts of the dumping determination methodology such as the procedure of the determination of the ‘normal values’, alternative rules for the determination of the ‘normal value’, determination of the ‘export price’, comparison between the ‘export price’ and ‘normal value’, and finally the calculation of dumping margin.

Article 2.2

Article 2.2 deals with situations other than the ordinary course, i.e. , when there is no appropriate domestic sale of the dumped commodity, the investigating authorities may use the alternative rules for the determination of the normal value. The authority has to find appropriate third country sales for this purpose. The original ADA article 2.2 states,

¹¹The term “initiated” as used in this agreement means the procedural action by which a member formally commences an investigation as provided in article 5.

'When there are no sales in ordinary course in the domestic market of the exporting country, the margin of dumping shall be determined by comparison with a comparable price of the like product when exported to an appropriate third country.'

The dispute settlement body has found that in many disputes the investigating agencies of the respondent countries have acted inconsistently with Article 2.2 and sub article 2.2.1. The list of disputes where the agencies have acted inconsistently are as follows.

- 1. In the dispute, *European Union — Anti-Dumping Measures on Biodiesel from Argentina*⁸**, the Panel upheld Argentina's claim that the EU acted inconsistently with Article 2.2.1.1 of the Anti-Dumping Agreement by failing to calculate the cost of production of biodiesel on the basis of the records kept by the producers/exporter under investigation. It considered that the reason stated by the EU authorities for disregarding producers' costs — i.e. because the prices for the input were artificially lower than international prices due to an alleged distortion — does not constitute a legally sufficient basis under Article 2.2.1.1 for concluding that the producers' records do not reasonably reflect the costs associated with the production and sale of biodiesel. Since the Panel found a violation of Article 2.2.1.1, it found it unnecessary to consider Argentina's claims under Article 2.2 of the Anti-Dumping Agreement and Article VI:1(b)(ii) of the GATT 1994. The Panel exercised judicial economy on Argentina's claim that the EU authorities acted inconsistently with Article 2.2.1.1 of the Anti-Dumping Agreement because they included costs not associated with production and sale of biodiesel in the calculation of the cost of production (WTO-DSB Panel reports).
- 2. In the dispute, *China — Anti-Dumping and Countervailing Duty Measures on Broiler Products from the United States*⁹**, the Panel found that the allocation methodology MOFCOM¹⁰ adopted was inconsistent with Article 2.2.1.1 because MOFCOM allocated processing costs to products that were not actually associated with their production and sale (WTO-DSB case law).

⁸ See the Dispute No DS473 of DSB

⁹ See the Dispute No DS427 of DSB

¹⁰ MOFCOM is the Chinese authority responsible for the AD investigations.

3. In the dispute, *United States — Measures Relating to Zeroing and Sunset Reviews*¹¹, the Appellate Body reversed the panel's finding that the United States does not act inconsistently with Articles 2.1, 2.4 and 2.4.2 of the Anti-Dumping Agreement and Articles VI:1 and VI:2 of the GATT, 1994, and instead found that the United States acts inconsistently with Articles 2.4 and 2.4.2 of the Anti-Dumping Agreement by maintaining zeroing procedures when calculating margins of dumping on the basis of transaction-to-transaction comparisons in original investigation (WTO-DSB Panel reports).
4. In the dispute titled, *European Union — Anti-Dumping Measures on Biodiesel from Argentina*¹², the Panel upheld Argentina's claim that the EU acted inconsistently with Article 2.2.1.1 of the Anti-Dumping Agreement by failing to calculate the cost of production of biodiesel on the basis of the records kept by the producers/exporters under investigation. The Panel considered that the reason stated by the EU authorities for disregarding producers' costs does not constitute a legally sufficient basis under Article 2.2.1.1 for concluding that the producers' records do not reasonably reflect the costs associated with the production and sale of biodiesel (WTO-DSB Panel reports).
5. In the dispute titled, *European Union — Anti-Dumping Measures on Certain Footwear from China*¹³, the Panel found that the EU acted inconsistently with Article 2.2.2(iii) of the AD Agreement with respect to the determination of the amounts and profit for one producer-exporter in the original investigation, and that the European Union acted inconsistently with its obligations under Articles 6.5 and 6.5.1 of the AD Agreement with respect to the confidential treatment or the non-confidential summarization of certain information in the original investigation and the expiry review (WTO-DSB Panel reports).
6. In the dispute *European Communities — Anti-Dumping Duties on Imports of Cotton-type Bed Linen from India*¹⁴ the Appellate Body reversed the findings of the Panel that the method for calculating amounts for administrative, selling and general

¹¹ See the Dispute No DS322 of DSB

¹² See the Dispute No DS473 of DSB

¹³ See the Dispute No DS405 of DSB

¹⁴ See the Dispute No DS141 of DSB

costs and profits provided for in Article 2.2.2(ii) of the Anti-Dumping Agreement may be applied where there is data on administrative, selling and general costs and profits for only one other exporter or producer; and in calculating the amount for profits under Article 2.2.2(ii) of the Anti-Dumping Agreement, a member may exclude sales by other exporters or producers that are not made in the ordinary course of trade and As a consequence the EC in calculating amounts for administrative, selling and general costs and profits in the anti-dumping investigation at issue in this dispute, acted inconsistently with Article 2.2.2(ii) of the Anti-Dumping Agreement (*EC- Cotton-type Bed Linen*).

7. *In the dispute European Communities — Anti-Dumping Measure on Farmed Salmon from Norway*¹⁵ The Panel found that the European Communities had acted inconsistently with Articles 2.2.1.1, 2.2.2, 2.2.2(iii), 3.1, 3.2, 3.4, 3.5, 4.1, 5.4, 6.4, 6.8 and paragraph 3 of Annex II, 6.10, 9.2, 9.4(i) and 9.4(ii) of the Anti-Dumping Agreement. It also found that the European Communities had not acted inconsistently with certain provisions of the Anti-Dumping Agreement in other respects and exercised judicial economy with respect to certain claims (WTO-DSB Panel reports).

Article 2.4.2

The most disputed part of Article 2 is sub-article 2.4.2 which deals with the calculation of the dumping margin. It has been violated several times by the US and EU. The DSB in many instances has ruled against them. Its provisions are clear and transparent but the US investigation authority has used it inconsistently with the original article. Let's see what the actual article states.

“Subject to the provisions governing fair comparison in paragraph 4, the existence of margins of dumping during the investigation phase shall normally be established on the basis of a comparison of a weighted average normal value with a weighted average of prices of all comparable export transactions or by a comparison of normal value and export prices on a transaction-to-transaction basis. A normal value established on a weighted average basis may be compared to prices of individual export transactions if the authorities find a pattern of export prices which differ significantly among different purchasers, regions or time periods, and if an explanation is provided as to why such differences cannot be taken into account appropriately by the use of a weighted average-to-weighted average or transaction-to-transaction comparison.”

¹⁵ See the Dispute No DS337 of DSB

USDOC, the AD investigating authority of US has misinterpreted the line.. ‘a comparison of normal value and export price on transaction-to-transaction basis’.. and thus has zeroed the negative dumping margins which has artificially inflated the dumping margin and subsequently injury and dumping duty. Therefore, the DSB panels have called this as the WTO inconsistent practice by both the US and EU. Let’s now see the violation of the Article 2.4.2 case by case.

1. The Korean government challenged the USDOC's use of zeroing methodology in the context of the W-T comparison methodology in *United States —Large residential washers from Korea*¹⁶ case. The DSB panel ruled in favour of Korea considering that its second sentence which allows an investigating authority to have particular regard to the pricing behavior of an exporter in respect of those pattern transactions in determining the margin of dumping for that exporter. The Panel found no basis for ignoring, or zeroing individual pattern transactions that may be priced above normal value. On the contrary, it considered that the word “individual” under the second sentence suggests that each pattern transaction shall be considered in its own right and with equal weight, irrespective of whether the export price is above or below normal value. Therefore, the Panel found that the United States' use of zeroing when applying the W-T comparison methodology to be inconsistent with the Article (WTO-DSB Panel reports).
2. The Panel upheld China's claim concerning the USDOC's use of zeroing in the calculation of dumping margins for individually-examined exporters/producers in *United States - Anti-Dumping Measures on Shrimp and Diamond Saw blades from China*¹⁷. It found that the “zeroing” methodology used by the USDOC in calculating the margins of dumping in the three anti-dumping investigations at issue was inconsistent with the Article, and concluded that the United States had acted inconsistently with its obligations under this provision (WTO-DSB Panel reports).
3. In the case *United States — Anti-dumping Measures on Certain Shrimp from Viet Nam*¹⁸ the Panel upheld Viet Nam's claim that the USDOC's use of zeroing to calculate the dumping margins of respondents selected for individual examination in the second and third administrative reviews was inconsistent with Article 2.4 of the

¹⁶ See Dispute no DS464 of DSB

¹⁷ See the Dispute No DS422 of DSB

¹⁸ See the Dispute No DS422 of DSB

- Anti-Dumping Agreement. The Panel exercised judicial economy with respect to additional claims of violation under Articles 9.3, 2.1 and 2.4.2 of the Anti-Dumping Agreement. The Panel upheld Viet Nam's claims that the United States' "zeroing methodology", as it relates to the use of simple zeroing in administrative reviews, is inconsistent with Article 9.3 of the Anti-Dumping Agreement and Article VI:2 of the GATT 1994 (WTO-DSB Panel reports).
4. **In *European Communities — Anti-Dumping Duties on Imports of Cotton-type Bed Linen from India***¹⁹, the panel concluded that the EC acted inconsistently with its obligations under Article 2.4.2 of the AD Agreement in determining the existence of margins of dumping on the basis of a methodology incorporating the practice of zeroing. The Appellate Body also upheld the finding of the Panel that the practice of "zeroing" when establishing "the existence of margins of dumping" as applied by the EC in the anti-dumping investigation at issue in this dispute is inconsistent with Article 2.4.2 (WTO-DSB Panel reports).
 5. **In *United States — Use of Zeroing in Anti-Dumping Measures Involving Products from Korea***²⁰ the Panel upheld Korea's claim. The Panel found that the "zeroing" methodology used by the USDOC in calculating the margins of dumping in the three anti-dumping investigations at issue was inconsistent with Article 2.4.2 and concluded that the United States had acted inconsistently with its obligations under this provision (WTO-DSB Panel reports).
 6. **Article 2.4.2** requires investigating authorities using the weighted average-to-weighted average methodology to establish margins of dumping on the basis of the comparison of "all comparable export transactions". But in *European Communities - Definitive Anti-Dumping Measures on Certain Iron or Steel Fasteners from China*²¹ the Appellate Body recalled that when making the dumping calculations based on the weighted average-to-weighted average methodology, the Commission excluded the transactions of certain models of fasteners exported by the Chinese producers that did not match with models of fasteners produced by the analogue country producer, Pooja Forge. The Appellate Body, therefore, upheld the

¹⁹ See the Dispute No DS 141 of DSB

²⁰ See the Dispute No DS 402 of DSB

²¹ See the Dispute No DS 397 of DSB

- Panel's finding that the European Union acted inconsistently with the Article 2.4.2 (WTO-DSB Panel reports).
7. **In United States - *Anti-Dumping Measures on Polyethylene Retail Carrier Bags from Thailand***²² case the Panel found that the United States acted inconsistently with Article 2.4.2 by using “zeroing” in the Final Determination as amended and the Order to determine the dumping margins for individually investigated Thai exporters whose margins of dumping were not based on total facts available. The panel recommended that the DSB request the United States to bring its measures into conformity with its obligations under the Anti-Dumping Agreement (WTO-DSB Panel reports).
 8. **In *United States - Continued Existence and Application of Zeroing Methodology and complaint by the European Communities***²³, the panel found that the United States acted inconsistently with the obligation set out under Article 2.4.2 by using model zeroing in the four investigations at issue in this dispute. One member of the panel expressed a separate opinion with regard to the EC's claims regarding zeroing in investigations and zeroing in periodic reviews. That member of the panel agreed with the conclusions reached by the majority of the members of this panel regarding all the claims raised by the European Communities in this dispute, but disagreed with the legal reasoning developed by the majority regarding the EC's claims on simple zeroing in periodic reviews, and, in part, model zeroing in investigations and provided his opinion on these matters (WTO-DSB Panel reports).
 9. **In the *United States — Measures Relating to Shrimp from Thailand***²⁴ case, the Panel upheld Thailand's claim that the United States acted inconsistently with Article 2.4.2 by using zeroing to calculate margins of dumping in respect of the anti-dumping measure (WTO-DSB Panel reports).
 10. **The Panel concluded in *United States — Anti-Dumping Measure on Shrimp from Ecuador***²⁵ that the US Department of Commerce acted inconsistently with Article 2.4.2 in its final and amended final affirmative determination of sales at less than fair value (dumping) with respect to certain frozen warm water shrimp from Ecuador. The

²² See the Dispute No DS383 of DSB

²³ See the Dispute No DS350 of DSB

²⁴ See the Dispute No DS343 of DSB

²⁵ See the Dispute No DS335 of DSB

Panel recommended the DSB to request the United States to bring its measures into conformity with its obligations under the Anti-Dumping Agreement (WTO-DSB Panel reports).

11. In the case *United States — Measures Relating to Zeroing and Sunset Reviews*²⁶, Appellate Body reversed the panel's finding that the United States does not act inconsistently with Articles 2.1, 2.4 and 2.4.2 of the Anti-Dumping Agreement and Articles VI:1 and VI:2 of the GATT 1994, and found instead that the United States acts inconsistently with Articles 2.4 and 2.4.2 of the Anti-Dumping Agreement by maintaining zeroing procedures when calculating margins of dumping on the basis of transaction-to-transaction comparisons in original investigations (WTO-DSB Panel reports).
12. The Panel upheld China's claim concerning the USDOC's use of zeroing in the calculation of dumping margins for individually-examined exporters/producers in *United States — Anti-Dumping Measures on Shrimp and Diamond Saw blades from China*²⁷. The Panel found that the “zeroing” methodology used by the USDOC in calculating the margins of dumping in the three anti-dumping investigations at issue was inconsistent with Article 2.4.2 and therefore concluded that the United States had acted inconsistently with its obligations under this provision. The Panel rejected China's claim concerning the separate rate, but noted that the calculation of the separate rate on the basis of individual margins calculated with zeroing necessarily incorporated the WTO-inconsistent zeroing methodology (WTO-DSB Panel reports).
13. In the dispute, *United States — Laws, Regulations and Methodology for Calculating Dumping Margins (Zeroing)*²⁸, the Appellate Body found that the zeroing methodology is inconsistent as such with Article 2.4.2 of the Anti-Dumping Agreement. With respect to the administrative reviews at issue, the Appellate Body reversed the Panel's finding that the United States did not act inconsistently with Article 9.3 of the Anti-Dumping Agreement and Article VI:2 of the GATT 1994, and

²⁶ See the Dispute No DS322 of DSB

²⁷ See the Dispute No DS422 of DSB

²⁸ See the Dispute No DS294 of DSB

found, instead, that the United States acted inconsistently with those provisions (WTO-DSB Panel reports).

3. Article 3- Determination of Injury

‘Dumping’ is the bringing of a product into the market of another country or another territory at a price less than the normal value of the product. In the WTO law dumping is not prohibited unless it causes damage or injury to the domestic industry of the importing country. Thus only injurious dumping is subject to the antidumping measures under Article VI of the GATT 1994 and the Anti-dumping Agreement. Therefore, once the existence of dumping is determined, the investigating authorities have to establish the threat of injury to the domestic industry and the causal link between dumping and the injury Article 3 of ADA deals with the determination of injury. The DSB has found that in many disputes the sub-articles 3.1, 3.2, 3.4 and 3.5 have been violated by the respondents. The list of the disputes is given below.

1. The Panel found that in the dispute *European Union — Anti-Dumping Measures on Biodiesel from Argentina*²⁹ the EU authorities failed to base their determination of injury factors on an “objective examination” of “positive evidence” in accepting revised data submitted by the EU domestic industry at a late stage of the investigation without assuring themselves of its accuracy and reliability, thereby acting inconsistently with Articles 3.1 and 3.4 of the Anti-Dumping Agreement (WTO-DSB Panel reports).
2. In the dispute *China — Anti-Dumping and Countervailing Duties on Certain Automobiles from the United States*³⁰, the Panel found a number of inconsistencies relating to MOFCOM's price effects and causation determinations, contrary to the requirements of Articles 3.1, 3.2 and 3.5 of the Anti-Dumping Agreement, and Articles 15.1, 15.2 and 15.5 of the SCM Agreement (WTO-DSB Panel reports).

²⁹ See the Dispute DS473

³⁰ See the Dispute DS440

3. In the dispute *‘China — Definitive Anti-Dumping Duties on X-Ray Security Inspection Equipment from the European Union’*³¹ the Panel upheld the European Union's claims against MOFCOM's price effects analysis as MOFCOM failed to ensure that the prices it was comparing as a part of its price effects analysis were actually comparable. In particular, the Panel concluded that MOFCOM's price undercutting and price suppression analyses were inconsistent with Articles 3.1 and 3.2 because they were not based on an objective examination of positive evidence (WTO-DSB case law).
4. The Panel concluded in dispute *‘China — Definitive Anti-Dumping Duties on X-Ray Security Inspection Equipment from the European Union’*³² that China acted inconsistently with Articles 3.1 and 3.4 because MOFCOM failed to consider all relevant economic factors, in particular, the “magnitude of the margin of dumping”. Further, it found that MOFCOM's examination of the state of the industry lacked objectivity and was not always reasoned and adequate. Finally, in the light of its findings under Articles 3.1 and 3.2 of the Anti-Dumping Agreement, the Panel exercised judicial economy regarding whether MOFCOM acted inconsistently with Article 3.4 by failing to take into account the differences between high-energy and low-energy scanners (WTO-DSB Panel reports).
5. The Appellate Body upheld the Panel’s finding in dispute *‘China — Countervailing and Anti-Dumping Duties on Grain Oriented Flat-rolled Electrical Steel from the United States’*³³ as MOFCOM’s price effects finding was inconsistent with Articles 3.1 and 3.2 of the Anti-Dumping Agreement. (WTO-DSB Panel reports).
6. In the dispute *‘European Communities — Definitive Anti-Dumping Measures on Certain Iron or Steel Fasteners from China’*³⁴ the Panel found that the EU investigating authorities acted inconsistently with of Articles 3.1 and 3.2 with respect to the consideration of the volume of dumped imports and causation analysis; It also concluded that the Commission's injury determination based on the data obtained

³¹ See the Dispute DS425

³² See the Dispute DS425

³³ See the Dispute DS414

³⁴ See the Dispute DS397

from a wrongly-defined domestic industry was inconsistent with Article 3.1 of the AD Agreement (WTO-DSB Panel reports).

7. ***European Communities — Anti-Dumping Measure on Farmed Salmon from Norway***³⁵ the Panel found that the European Communities had acted inconsistently with Articles 2.2.1.1, 2.2.2, 2.2.2(iii), 3.1, 3.2, 3.4, 3.5, 4.1, 5.4, 6.4, 6.8 and paragraph 3 of Annex II, 6.10, 9.2, 9.4(i) and 9.4(ii) of the Anti-Dumping Agreement. It also found that the European Communities had not acted inconsistently with certain provisions of the Anti-Dumping Agreement, and in other respects exercised judicial economy with respect to certain claims (WTO-DSB Panel reports).
8. ***In Mexico — Anti-Dumping Duties on Steel Pipes and Tubes from Guatemala***³⁶ the Panel found that Mexico's initiation of the investigation, conduct of the investigation and the imposition of a definitive anti-dumping measure on imports of black and galvanized steel pipes and tubes from Guatemala were inconsistent with the requirements of Articles 5.3, 5.8, 3.1, 3.2, 3.4 and 3.5, and paragraphs 3, 5, 6 and 7 of Annex II of the Anti-Dumping Agreement (WTO-DSB Panel reports).
9. ***In Mexico — Anti-Dumping Investigation of High-Fructose Corn Syrup (HFCS) from the United States***³⁷ the Panel found that Mexico's imposition of the definitive anti-dumping measure on imports of HFCS from the US was inconsistent with Articles 3.1, 3.2, 3.4, 3.7 and 3.7(i); Article 7.4; Article 10.2; Article 10.4 of Anti-Dumping agreement; and Articles 12.2 and 12.2.2 (WTO-DSB Panel reports).
10. ***Thailand — Anti-Dumping Duties on Angles, Shapes and Sections of Iron or Non-Alloy Steel and H Beams from Poland***³⁸ The Panel concluded that: Thailand's imposition of the definitive anti-dumping measure on imports of H-beams from Poland was inconsistent with the requirements of Article 3 of the Anti-Dumping Agreement in that: it acted inconsistently with the second sentence of Article 3.2 and Article 3.1, the Thai authorities made a determination of a causal relationship between dumped imports and any possible injury on the basis of (a) their findings concerning the price effects of dumped imports, which the Panel had already found to

³⁵ See the Dispute DS337

³⁶ See the Dispute DS331

³⁷ See the Dispute DS132

³⁸ See the Dispute DS122

- be inconsistent with the second sentence of Article 3.2 and Article 3.1; and (b) their findings concerning injury, which the Panel had already found to be inconsistent with Article 3.4 and 3.1. (WTO-DSB Panel reports).
- 11. *European Communities — Anti-Dumping Duties on Imports of Cotton-type Bed Linen from India***³⁹ The panel, however, also concluded that the EC acted inconsistently with its obligations under Articles 2.4.2, 3.4, and 15 of the AD Agreement in: failing to evaluate all relevant factors having a bearing on the state of the domestic industry, and specifically all the factors set forth in Article 3.4 (WTO-DSB Panel reports).
- 12. *European Communities — Anti-Dumping Duties on Imports of Cotton-type Bed Linen from India*** Appellate Body found that the Panel properly discharged its duties under Article 17.6 of the Anti-Dumping Agreement and Article 11 of the DSU and, therefore, upheld the Panel’s finding that the EC had information before it on the relevant economic factors listed in Article 3.4 of the Anti-Dumping Agreement when making its injury determination (WTO-DSB Panel reports).
- 13. *European Communities — Anti-Dumping Measure on Farmed Salmon from Norway***⁴⁰ The Panel found that the European Communities had acted inconsistently with Articles 2.2.1.1, 2.2.2, 2.2.2(iii), 3.1, 3.2, 3.4, 3.5, 4.1, 5.4, 6.4, 6.8 and paragraph 3 of Annex II, 6.10, 9.2, 9.4(i) and 9.4(ii) of the Anti-Dumping Agreement. The Panel also found that the European Communities had not acted inconsistently with certain provisions of the Anti-Dumping Agreement, in other respects, and exercised judicial economy with respect to certain claims (WTO-DSB Panel reports).
- 14. *In Korea — Anti-Dumping Duties on Imports of Certain Paper from Indonesia***⁴¹ the Panel concluded that the KTC acted inconsistently with its obligation under Article 6.2 by declining to provide the Sinar Mas Group with an opportunity to make comments on the evaluation of the injury factors under Article 3.4 (WTO-DSB Panel reports).

³⁹ See the Dispute DS141

⁴⁰ See the Dispute DS337

⁴¹ See the Dispute DS312

- 15. *In Egypt — Definitive Anti-Dumping Measures on Steel Rebar from Turkey***⁴² the Panel concluded that Egypt acted inconsistently with its obligations under Article 3.4 of the AD Agreement in that while it gathered data on all the factors listed in Article 3.4, the Egyptian Investigating Authority failed to evaluate all of them listed in Article 3.4 as it did not evaluate productivity, actual and potential negative effects on cash flow, employment, wages and ability to raise capital or investments (WTO-DSB Panel reports).
- 16. *In European Communities — Anti-Dumping Duties on Imports of Cotton-type Bed Linen from India***⁴³ the panel, concluded that the EC acted inconsistently with its obligations under Articles 2.4.2, 3.4, and 15 of the AD Agreement in failing to evaluate all relevant factors having a bearing on the state of the domestic industry and specifically all the factors set forth in Article 3.4 (WTO-DSB Panel reports).
- 17. *In European Union — Anti-Dumping Measures on Biodiesel from Argentina***⁴⁴ the Panel found that the EU authorities failed to base their determination of these two injury factors on an “objective examination” of “positive evidence” in accepting revised data submitted by the EU domestic industry at a late stage of the investigation without assuring themselves of its accuracy and reliability, thereby acting inconsistently with Articles 3.1 and 3.4 of the Anti-Dumping Agreement (WTO-Panel reports).
- 18. *In China — Anti-Dumping and Countervailing Duties on Certain Automobiles from the United States***⁴⁵ the Panel found a number of inconsistencies relating to MOFCOM's price effects and causation determinations, contrary to the requirements of Articles 3.1, 3.2 and 3.5 of the Anti-Dumping Agreement, and Articles 15.1, 15.2 and 15.5 of the SCM Agreement (WTO-DSB Panel reports).
- 19. *In China — Definitive Anti-Dumping Duties on X-Ray Security Inspection Equipment from the European Union***⁴⁶ the Panel upheld the European Union's claims against MOFCOM's price effects analysis on the basis that MOFCOM failed to ensure that the prices it was comparing as a part of its price effects analysis were

⁴² See the Dispute DS211

⁴³ See the Dispute DS141

⁴⁴ See the Dispute DS473

⁴⁵ See the Dispute DS440

⁴⁶ See the Dispute DS425

actually comparable. In particular, the Panel concluded that MOFCOM's price undercutting and price suppression analyses were inconsistent with Articles 3.1 and 3.2 because they were not based on an objective examination of positive evidence (WTO-DSB Panel reports).

20. *In China — Definitive Anti-Dumping Duties on X-Ray Security Inspection Equipment from the European Union* the Panel upheld the European Union's claims against MOFCOM's price effects analysis. In particular, it concluded that MOFCOM's price undercutting and price suppression analyses were inconsistent with Articles 3.1 and 3.2 because they were not based on an objective examination of positive evidence. It concluded that China acted inconsistently with Articles 3.1 and 3.4 because MOFCOM failed to consider all relevant economic factors, in particular the “magnitude of the margin of dumping”. Further, it found that MOFCOM's examination of the state of the industry lacked objectivity and was not well reasoned and adequate. Finally, in the light of its findings under Articles 3.1 and 3.2 of the Anti-Dumping Agreement, it exercised judicial economy regarding whether MOFCOM acted inconsistently with Article 3.4 by failing to take into account the differences between high-energy and low-energy scanners. It concluded that MOFCOM acted inconsistently with Articles 3.1 and 3.5 (WTO-DSB Panel reports).

21. *In China — Countervailing and Anti-Dumping Duties on Grain Oriented Flat-rolled Electrical Steel from the United States*⁴⁷ the Panel upheld the United States' claim, finding that China had acted inconsistently with Articles 3.1 and 3.2 of the Anti-Dumping Agreement, and Articles 15.1 and 15.2 of the SCM Agreement. The Appellate Body upheld the Panel's finding that MOFCOM's price effects finding was inconsistent with Articles 3.1 and 3.2 of the Anti-Dumping Agreement and Articles 15.1 and 15.2 of the SCM Agreement. Like the Panel, the Appellate Body rejected China's interpretation that Articles 3.2 and 15.2 merely require an investigating authority to consider the existence of price depression or suppression, and do not require the consideration of any link between subject imports and these price effects (WTO-DSB Panel reports).

⁴⁷ See the Dispute DS414

- 22. *In European Communities — Definitive Anti-Dumping Measures on Certain Iron or Steel Fasteners from China***⁴⁸ the Panel also found that the EU investigating authorities acted inconsistently with Articles 3.1 and 3.2, AD Agreement with respect to the consideration of the volume of dumped imports and Articles 3.1 and 3.5 with respect to the causation analysis (WTO-DSB Panel reports).
- 23. *In European Communities — Definitive Anti-Dumping Measures on Certain Iron or Steel Fasteners from China*** Notice of initiation stated that only those producers willing to be included in the injury sample would be considered. the Panel found that by defining the domestic industry on the basis of domestic producers that came forward in response this notice introduced a material risk of distortion to the IA's injury analysis that would necessarily render the resulting injury determination inconsistent with the obligation to make an objective injury analysis based on positive evidence laid down in Article 3.1 of the AD Agreement. It concluded that the Commission's injury determination, based on the data obtained from a wrongly-defined domestic industry, was inconsistent with Article 3.1 (WTO-DSB Panel reports).
- 24. *European Communities — Anti-Dumping Measure on Farmed Salmon from Norway***⁴⁹ The Panel found that the European Communities had acted inconsistently with Articles 2.2.1.1, 2.2.2, 2.2.2(iii), 3.1, 3.2, 3.4, 3.5, 4.1, 5.4, 6.4, 6.8 and paragraph 3 of Annex II, 6.10, 9.2, 9.4(i) and 9.4(ii) of the Anti-Dumping Agreement. it also found that the European Communities had not acted inconsistently with certain provisions of the Anti-Dumping Agreement in other respects too and exercised judicial economy with respect to certain claims (WTO-DSB Panel reports).
- 25. *Mexico — Anti-Dumping Duties on Steel Pipes and Tubes from Guatemala***⁵⁰ the Panel found that Mexico's initiation of the investigation, the conduct of the investigation and the imposition of a definitive anti-dumping measure on imports of black and galvanized steel pipes and tubes from Guatemala was inconsistent with the requirements of Articles 5.3, 5.8, 3.1, 3.2, 3.4 and 3.5, and paragraphs 3, 5, 6 and 7 of Annex II, of the Anti-Dumping Agreement (WTO-DSB Panel reports).

⁴⁸ See the Dispute DS397

⁴⁹ See the Dispute DS337

⁵⁰ See the Dispute DS331

- 26. Argentina — Definitive Anti-Dumping Duties on Poultry from Brazil**⁵¹ The Panel found that Argentina had acted inconsistently with its obligations under Articles 2.4, 2.4.2, 3.1, 3.2, 3.3, 3.4, 3.5, 5.1, 5.8, 6.1.1, 6.1.3, 6.8 and Annex II, 6.10 and 12.1 of the Anti-Dumping Agreement. It concluded that Argentina had not acted inconsistently with a number of Articles from the same Agreement and declined to rule on a number of claims for judicial economy reasons (WTO-DSB Panel reports).
- 27. Mexico — Anti-Dumping Investigation of High-Fructose Corn Syrup (HFCS) from the United States**⁵² The Panel concluded that Mexico's imposition of definitive anti-dumping duties on imports of HFCS from the US on the basis of the SECOFI redetermination was inconsistent with the requirements of the AD Agreement. This was owing to Mexico's inadequate consideration of the impact of dumped imports on the domestic industry, and its inadequate consideration of the potential effect of the alleged restraint agreement in its determination of likelihood of substantially increased importation are not consistent with the provisions of Articles 3.1, 3.4, 3.7 and 3.7(i) of the AD Agreement. The Panel therefore considered that Mexico had failed to implement the recommendation of the original Panel and the DSU to bring its measure into conformity with its obligations under the AD Agreement (WTO-DSB Panel reports).
- 28. Mexico — Anti-Dumping Investigation of High-Fructose Corn Syrup (HFCS) from the United States** Mexico requested the Appellate Body to examine and reverse the Panel's conclusions that its imposition of definitive anti-dumping duties on imports of HFCS from the United States, on the basis of SECOFI's redetermination was inconsistent with the requirements of the Anti-Dumping Agreement this was because of Mexico's inadequate consideration of the impact of dumped imports on the domestic industry, and its inadequate consideration of the potential effect of the alleged restraint agreement in its determination of likelihood of substantially increased importation, These are not consistent with the provisions of Article 3.1, 3.4, 3.7 and 3.7(i) of the Anti-Dumping Agreement (WTO-DSB Panel reports).

⁵¹ See the Dispute DS224

⁵² See the Dispute DS132

29. Thailand — Anti-Dumping Duties on Angles, Shapes and Sections of Iron or Non-Alloy Steel and H Beams from Poland⁵³ the Panel concluded that Poland failed to establish that Thailand had acted inconsistently with its obligations under Article 2 of the Anti-Dumping Agreement or Article VI of the GATT, 1994 in the calculation of profit in constructing normal value. Its imposition of the definitive anti-dumping measure on imports of H-beams from Poland was inconsistent with the requirements of Article 3 of the Anti-Dumping Agreement.

4. Article 5 Initiation and Subsequent Investigation

The antidumping agreement of the WTO sets out the procedure of how the investigating authorities of the member countries should initiate and conduct an antidumping investigation. It mostly addresses issues regarding the initiation of an investigation, period of investigation and the conduct of the investigations. Though the ADA has given clear guidelines for the AD initiation procedures, some member countries have misinterpreted them and therefore DSB has found them inconsistent with the WTO agreement. The DSB panel has found that two sub-articles Article 5.3 and Article 5.8 have been frequently violated by the respondent countries.

Article 5.3 of the ADA requires that the investigating authorities examine the accuracy and adequacy of the evidence provided in the application to determine whether there is sufficient evidence to justify the initiations.

As per Article 5.8 an application to initiate an AD investigation shall be rejected and the Investigation shall be terminated immediately as soon as the authorities are satisfied that there is not enough evidence neither of dumping nor of injury.

The list of disputes, where Article 5 as a whole or sub-articles thereof, have been violated by the respondent countries, is given below.

1. European Communities - Anti-Dumping Measure on Farmed Salmon from Norway⁵⁴ The Panel found that the European Communities had acted inconsistently with Articles 2.2.1.1, 2.2.2, 2.2.2(iii), 3.1, 3.2, 3.4, 3.5, 4.1, 5.4, 6.4, 6.8 and

⁵³ See the Dispute DS122

⁵⁴ See the Dispute DS337

- paragraph 3 of Annex II, 6.10, 9.2, 9.4(i) and 9.4(ii) of the Anti-Dumping Agreement. It also found that they had not acted inconsistently with certain provisions of the Anti-Dumping Agreement in other respects and had exercised judicial economy with respect to certain claims (WTO-DSB Panel reports).
2. ***United States — Continued Dumping and Subsidy Offset Act of 2000***⁵⁵ the Panel concluded that the CDSOA was inconsistent with Articles 5.4, 18.1 and 18.4 of the Anti-Dumping Agreement, Articles 11.4, 32.1 and 32.5 of the Subsidies Agreement, Articles VI:2 and VI:3 of the GATT 1994, and Article XVI:4 of the WTO Agreement. It rejected the complaining parties' claims that the CDSOA was inconsistent with Articles 8.3 and 15 of the Anti-Dumping (WTO-DSB Panel reports).
 3. ***United States — Anti-Dumping Act of 1916*** The Panel found that the 1916 Act violated Articles VI:1 of the GATT 1994 and Articles 1, 4.1, 5.1, 5.2, 5.4 and 18.1 of the Anti-Dumping Agreement; and by violating Articles VI:1 and VI:2 of the GATT 1994, and Articles 1, 4.1, 5.1, 5.2, 5.4 and 18.1 of the Anti-Dumping Agreement. The 1916 Act violated Article XVI:4 of the WTO Agreement and Article 18.4 of the Anti-Dumping Agreement (WTO-DSB Panel reports).
 4. ***Mexico — Anti-Dumping Duties on Steel Pipes and Tubes from Guatemala***⁵⁶ The Panel found that Mexico's initiation of the investigation, conduct of the investigation and imposition of a definitive anti-dumping measure on imports of black and galvanized steel pipes and tubes from Guatemala was inconsistent with the requirements of Articles 5.3, 5.8, 3.1, 3.2, 3.4 and 3.5, and paragraphs 3, 5, 6 and 7 of Annex II, of the Anti-Dumping Agreement (WTO-DSB Panel reports).
 5. ***Argentina — Definitive Anti-Dumping Duties on Poultry from Brazil***⁵⁷ The Panel found that Argentina had acted inconsistently with its obligations under Articles 2.4, 2.4.2, 3.1, 3.2, 3.3, 3.4, 3.5, 5.1, 5.8, 6.1.1, 6.1.3, 6.8 and Annex II, 6.10 and 12.1 of the Anti-Dumping Agreement. It concluded that Argentina had not acted inconsistently with a number of Articles from the same Agreement and declined to rule on a number of claims for judicial economy reasons (WTO-DSB Panel reports).

⁵⁵ See the Dispute DS217

⁵⁶ See the Dispute DS331

⁵⁷ See the Dispute DS241

6. ***Guatemala — Definitive Anti-Dumping Measure on Grey Portland Cement from Mexico***⁵⁸ The Panel concluded that Guatemala's initiation of an investigation, conduct of the investigation and imposition of a definitive measure on imports of grey Portland cement from Mexico's Cruz Azul is inconsistent with Article 5.8 of the Anti-Dumping Agreement (WTO-DSB Panel reports).

5. Article 6- Evidence and Annexure II

Article 6 of the ADA deals with the rules concerning the process of investigation including evidence, information and procedural elements. The most frequently violated sub Articles are 6.2, 6.4, 6.5 and 6.8. A list of the disputes where the Article 6 has been found inconsistent with the ADA by DSB panel is given below.

1. ***European Communities — Definitive Anti-Dumping Measures on Certain Iron or Steel Fasteners from China***⁵⁹ The Panel found that the application of Article 9(5) of the Basic Regulation in the fasteners investigation was inconsistent with AD Agreement Articles 6.10 and 9.2. It also found that the EU investigating authorities acted inconsistently with AD Agreement Articles 3.1 and 3.2 with respect to the consideration of the volume of dumped imports AD Agreement Articles 3.1 and 3.5 with respect to the causation analysis AD Agreement Articles 6.4 and 6.2 with respect to aspects of the normal value determination AD Agreement Article 6.5.1 with respect to non-confidential versions of questionnaire responses of two European producers and AD Agreement Article 6.5 with respect to confidential treatment of information in the questionnaire response of an Indian producer; and AD Agreement Article 6.5 with respect to the confidential treatment of the Eurostat data on total EU production of fasteners (WTO-DSB Panel reports).
2. ***European Communities — Definitive Anti-Dumping Measures on Certain Iron or Steel Fasteners from China*** The Appellate Body upheld the Panel's findings under Articles 6.2 and 6.4 of the Anti-Dumping Agreement that the European Union failed to disclose in a timely manner information regarding product categorizations that was necessary for the presentation of the Chinese producers' case in the dumping

⁵⁸ See the Dispute DS156

⁵⁹ See the Dispute DS397

- determination and for the defense of their interests. It also found that the European Union acted inconsistently with Article 6.2 in the review investigation. Thus, it upheld the Panel's overall finding that the European Union acted inconsistently with Articles 6.4 and 6.2 in the review investigation (WTO-DSB Panel reports).
3. *Korea — Anti-Dumping Duties on Imports of Certain Paper from Indonesia*⁶⁰ The Panel concluded that the KTC acted inconsistently with its obligation under Article 6.2 by declining to provide an opportunity to make comments on the evaluation of the injury factors under Article 3.4 (WTO-DSB Panel reports).
 4. *Thailand — Anti-Dumping Duties on Angles, Shapes and Sections of Iron or Non-Alloy Steel and H Beams from Poland*⁶¹ The Appellate Body upheld the Panel's conclusion that with respect to the claims under Articles 2, 3 and 5 the request for the establishment of a panel submitted by Poland in this case was sufficient to meet the requirements of Article 6.2 of the DSU (WTO-DSB Panel reports).
 5. *China — Anti-Dumping and Countervailing Duties on Certain Automobiles from the United States*⁶² the Panel found that MOFCOM erred in its determination of the residual anti-dumping and countervailing duty rates for unknown exporters of the subject product. It concluded that these residual duty rates did not **conform to the requirements of Article 6.8**(WTO-DSB Panel reports).
 6. *China — Countervailing and Anti-Dumping Duties on Grain Oriented Flat-rolled Electrical Steel from the United States*⁶³ The Panel upheld the United States' claim that China had acted inconsistently with Article 6.8, paragraph 1 of Annex II of the Anti-Dumping Agreement and Article 12.7 of the SCM Agreement because MOFCOM improperly resorted to facts available in calculating the dumping and subsidy rates for exporters that were unknown to it (WTO-DSB Panel reports).
 7. *United States — Anti-dumping Measures on Certain Shrimp from Viet Nam*⁶⁴ the Panel found that the USDOC's application of a facts available rate to the Vietnam-wide entity in the second administrative review, and a rate that was in substance a

⁶⁰ See the Dispute DS312

⁶¹ See the Dispute DS122

⁶² See the Dispute DS440

⁶³ See the Dispute DS414

⁶⁴ See the Dispute DS404

facts available rate in the third administrative review, was inconsistent with Article 6.8 of the Anti-Dumping Agreement (WTO-DSB Panel reports).

8. ***European Communities — Anti-Dumping Measure on Farmed Salmon from Norway***⁶⁵ The Panel found that the European Communities had acted inconsistently with Articles 2.2.1.1, 2.2.2, 2.2.2(iii), 3.1, 3.2, 3.4, 3.5, 4.1, 5.4, 6.4, 6.8 and paragraph 3 of Annex II, 6.10, 9.2, 9.4(i) and 9.4(ii) of the Anti-Dumping Agreement. It also found that they had not acted inconsistently with certain provisions of the Anti-Dumping Agreement in other respects and exercised judicial economy with respect to certain claims (WTO-DSB Panel reports).
9. ***Korea — Anti-Dumping Duties on Imports of Certain Paper from Indonesia***⁶⁶ The Panel concluded that the KTC acted inconsistently with Article 6.8 of the Anti-Dumping Agreement and paragraph 7 of Annex II by failing to exercise special circumspection in the use of information from secondary sources in its effort to base its determination of CMI's interest expenses on the best information available (WTO-DSB Panel reports).
10. ***Argentina — Definitive Anti-Dumping Duties on Poultry from Brazil***⁶⁷ the Panel circulated its Report to the members. It found that Argentina had acted inconsistently with its obligations under Articles 2.4, 2.4.2, 3.1, 3.2, 3.3, 3.4, 3.5, 5.1, 5.8, 6.1.1, 6.1.3, 6.8 and Annex II, 6.10 and 12.1 of the Anti-Dumping Agreement. It also concluded that Argentina had not acted inconsistently with a number of Articles from the same Agreement and declined to rule on a number of claims for judicial economy reasons (WTO-DSB Panel reports).

6. Article 9 : Imposition and Collection of Antidumping Duties

The ADA article 9 gives guidelines to the duty collection authorities of the members. It has laid the rules and procedures regarding the imposition and collection of antidumping duties. DSB has recorded and therefore ruled against the respondents of the disputes due to the inconsistencies of the practices with the ADA framework. The

⁶⁵ See the Dispute DS337

⁶⁶ See the Dispute DS312

⁶⁷ See the Dispute DS241

list of disputes is given below where the investigating authorities have acted inconsistently with the WTO agreement (WTO-DSB Panel reports).

1. ***United States — Measures Relating to Zeroing and Sunset Reviews***⁶⁸ The appellate body reversed the panel's findings that the United States does not act inconsistently with Articles 2.1, 2.4 and 9.1-9.3 of the Anti-Dumping Agreement and Articles VI:1 and VI:2 of the GATT 1994. It found instead that the United States acted inconsistently with Articles 2.4 and 9.3 of the Anti-Dumping Agreement and Article VI:2 of the GATT 1994 by maintaining zeroing procedures in periodic reviews (WTO-DSB Panel reports).
2. ***European Union — Anti-Dumping Measures on Biodiesel from Argentina***⁶⁹ The Panel upheld Argentina's claim that the European Union acted inconsistently with Article 9.3 of the Anti-Dumping Agreement and Article VI:2 of the GATT 1994 by imposing anti-dumping duties in excess of the margin of dumping that should have been established under Article 2 of the Anti-Dumping Agreement. It upheld these claims, reasoning that both Article 9.3 of the Anti-Dumping Agreement and Article VI:2 of the GATT 1994 refer to the margin of dumping established in a manner consistent with Article 2, as opposed to whatever margin (WTO-consistent or not) was actually established by the investigating authority (WTO-DSB Panel reports).
3. ***United States — Anti-dumping and Countervailing Measures on large residential washers from Korea***⁷⁰ The Panel upheld Korea's claims against zeroing in the context of the W-T comparison methodology under Articles 2.4 and 9.3 of the Anti-Dumping Agreement and Article VI:2 of the GATT 1994 (WTO-DSB Panel reports).
4. ***United States — Anti-Dumping Measures on Certain Shrimp from Viet Nam***⁷¹ the Panel found that the USDOC had used zeroing to calculate the dumping margins of individually-examined Vietnamese producers/exporters in the three administrative reviews at issue and that by doing so had acted inconsistently with Article 9.3 of the Anti-Dumping Agreement and Article VI:2 of the GATT 1994 (WTO-DSB Panel reports).

⁶⁸ See the Dispute DS322

⁶⁹ See the Dispute DS473

⁷⁰ See the Dispute DS464

⁷¹ See the Dispute DS429

5. *United States — Continued Existence and Application of Zeroing Methodology*⁷²

The Panel found that the United States acted inconsistently with its obligations under Article VI:2 of the GATT 1994 and Article 9.3 of the Anti-Dumping Agreement by applying simple zeroing in the 29 periodic reviews at issue in this dispute. The Appellate Body further upheld its finding that the 14 periodic and sunset reviews were within its terms of reference and the panel's finding that the United States acted inconsistently with Article 9.3 of the Anti-Dumping Agreement and Article VI:2 of the GATT 1994 by applying simple zeroing in the 29 periodic reviews, and accordingly declined to rule on the conditional appeals of the European Communities. (WTO-DSB Panel reports).

6. *United States — Customs Bond Directive for Merchandise Subject to Anti-Dumping/Countervailing Duties*⁷³

The Appellate Body's report was circulated to the members. It upheld the Panel's finding that the Amended CBD by virtue of which the EBR is imposed is not inconsistent "as such" and "as applied" with Articles 9.1, 9.2, 9.3, and 9.3.1 of the Anti-Dumping Agreement and that it is not inconsistent "as such" with Articles 19.2, 19.3, and 19.4 of the SCM Agreement (WTO-DSB Panel reports).

7. *United States — Measures Relating to Zeroing and Sunset Reviews*⁷⁴

The Appellate Body reversed the Panel's findings that the United States does not act inconsistently with Articles 2.1, 2.4 and 9.1-9.3 of the Anti-Dumping Agreement and Articles VI:1 and VI:2 of the GATT 1994. Instead that it found the United States acts inconsistently with Articles 2.4 and 9.3 of the Anti-Dumping Agreement and Article VI:2 of the GATT 1994 by maintaining zeroing procedures in periodic reviews (WTO-DSB Panel reports).

⁷² See the Dispute DS337

⁷³ See the Dispute DS345

⁷⁴ See the Dispute DS322

7. Article 12 Public Notice and Explanation of Determination

In order to increase the transparency of the determinations made by the domestic authorities and to encourage solid and thorough reasoning underlying such determinations. Article 12 of the ADA provides details regarding the requirement for public notice by investigating authorities after the preliminary and final determinations and undertakings. But the DSB Panel has noticed several violations of the this article by the domestic authorities of the respondent country. Sub-article 12.2 and 12.2.2 have been found violated most of the times.

The article 12.2 as per the Agreement states..

“Public notice shall be given of any preliminary or final determination, whether affirmative or negative, of any decision to accept an undertaking pursuant to Article 8, of the termination of such an undertaking, and of the termination of a definitive anti-dumping duty. Each such notice shall set forth, or otherwise make available through a separate report, in sufficient detail the findings and conclusions reached on all issues of fact and law considered material by the investigating authorities. All such notices and reports shall be forwarded to the Member or Members the products of which are subject to such determination or undertaking and to other interested parties known to have an interest therein”⁷⁵”

11. Argentina — Definitive Anti-Dumping Duties on Poultry from Brazil⁷⁶ The Panel circulated its Report to the members. It found that Argentina had acted inconsistently with its obligations under Articles 2.4, 2.4.2, 3.1, 3.2, 3.3, 3.4, 3.5, 5.1, 5.8, 6.1.1, 6.1.3, 6.8 and Annex II, 6.10 and 12.1 of the Anti-Dumping Agreement. It also concluded that Argentina had not acted inconsistently with a number of Articles from the same Agreement and declined to rule on a number of claims for judicial economy reasons (WTO-DSB Panel reports).

12. Argentina — Definitive Anti-Dumping Duties on Poultry from Brazil⁷⁷ The Panel found that Argentina had acted inconsistently with its obligations under Articles 2.4, 2.4.2, 3.1, 3.2, 3.3, 3.4, 3.5, 5.1, 5.8, 6.1.1, 6.1.3, 6.8 and Annex II, 6.10 and 12.1 of the Anti-Dumping Agreement. It also concluded that Argentina had not acted inconsistently with a number of Articles from the same Agreement and declined to rule on a number of claims for judicial economy reasons (WTO-DSB Panel reports).

⁷⁵ Please see the Article 12 of ADA

⁷⁶ See the Dispute DS241

⁷⁷ See the Dispute DS241

13. Mexico — Anti-Dumping Investigation of High-Fructose Corn Syrup (HFCS) from the United States⁷⁸ The Panel found that Mexico's initiation of the anti-dumping investigation on imports of HFCS from the US was consistent with the requirements of Articles 5.2, 5.3, 5.8, 12.1 and 12.1.1(iv) of the Anti-Dumping Agreement (WTO-DSB Panel reports).

8. Article 18 : Final Provisions

Article 18 is crucial in the process of investigation. It deals with the last stage in investigation, i.e., the imposition of final antidumping duty. The sub articles which have been found violated by the DSB are 18.1 and article 18.4. Before we see the list of the disputes where these sub-articles have been violated, let's see the original text of the article from ADA.

Article 18.1 *No specific action against dumping of exports from another Member can be taken except in accordance with the provisions of GATT 1994, as interpreted by this Agreement.*⁷⁹ (Article 18.1)

Article 18.4 *Each Member shall take all necessary steps, of a general or particular character, to ensure, not later than the date of entry into force of the WTO Agreement for it, the conformity of its laws, regulations and administrative procedures with the provisions of this Agreement as they may apply for the Member in question (18.4)*

1. United States — Continued Dumping and Subsidy Offset Act of 2000⁸⁰ The Panel concluded that the CDSOA was inconsistent with Articles 5.4, 18.1 and 18.4 of the Anti-Dumping Agreement, Articles 11.4, 32.1 and 32.5 of the Subsidies Agreement, Articles VI:2 and VI:3 of the GATT 1994, and Article XVI:4 of the WTO Agreement (WTO-DSB Panel reports).

2. United States — Continued Dumping and Subsidy Offset Act of 2000 The Panel concluded that the CDSOA was inconsistent with Articles 5.4, 18.1 and 18.4 of the Anti-Dumping Agreement, Articles 11.4, 32.1 and 32.5 of the Subsidies Agreement, Articles VI:2 and VI:3 of the GATT 1994, and Article XVI:4 of the WTO

⁷⁸ See the Dispute DS132

⁷⁹ This is not intended to preclude action under other relevant provisions of GATT 1994, as appropriate.

⁸⁰ See the Dispute DS217

- Agreement. The Panel rejected the complaining parties' claims that the CDSOA was inconsistent with Articles 8.3 and 15 of the Anti-Dumping (WTO-DSB Panel reports).
3. **United States — Anti-Dumping Act of 1916** The Panel found that by not providing for a number of procedural requirements found in Article VI:1 of the GATT 1994 and the Anti-Dumping Agreement, the 1916 Act violated Articles VI:1 of the GATT 1994 and Articles 1, 4.1, 5.1, 5.2, 5.4 and 18.1 of the Anti-Dumping Agreement; and by violating Articles VI:1 and VI:2 of the GATT 1994, and Articles 1, 4.1, 5.1, 5.2, 5.4 and 18.1 of the Anti-Dumping Agreement, the 1916 Act violated Article XVI:4 of the WTO Agreement and Article 18.4 of the Anti-Dumping Agreement (WTO-DSB Panel reports).
 4. **United States — Continued Dumping and Subsidy Offset Act of 2000**⁸¹ The Panel concluded that the CDSOA was inconsistent with Articles 5.4, 18.1 and 18.4 of the Anti-Dumping Agreement, Articles 11.4, 32.1 and 32.5 of the Subsidies Agreement, Articles VI:2 and VI:3 of the GATT 1994, and Article XVI:4 of the WTO Agreement (WTO-DSB Panel reports).
 5. **United States — Continued Dumping and Subsidy Offset Act of 2000** The Panel concluded that the CDSOA was inconsistent with Articles 5.4, 18.1 and 18.4 of the Anti-Dumping Agreement, Articles 11.4, 32.1 and 32.5 of the Subsidies Agreement, Articles VI:2 and VI:3 of the GATT 1994, and Article XVI:4 of the WTO Agreement. It rejected the complaining parties' claims that the CDSOA was inconsistent with Articles 8.3 and 15 of the Anti-Dumping (WTO-DSB Panel reports).
 6. **United States — Anti-Dumping Act of 1916** The Panel found that by not providing for a number of procedural requirements found in Article VI:1 of the GATT 1994 and the Anti-Dumping Agreement, the 1916 Act violated Articles VI:1 of the GATT 1994 and Articles 1, 4.1, 5.1, 5.2, 5.4 and 18.1 of the Anti-Dumping Agreement and by violating Articles VI:1 and VI:2 of the GATT 1994, and Articles 1, 4.1, 5.1, 5.2, 5.4 and 18.1 of the Anti-Dumping Agreement, the 1916 Act violated Article XVI:4 of the

⁸¹ See the Dispute DS217

WTO Agreement and Article 18.4 of the Anti-Dumping Agreement (WTO-DSB Panel reports).

Thus the violations of certain articles are associated with the particular countries. For example, the Article 2.4.2 which basically deals with calculations of the dumping margins. US has violated this article maximum times. It has used 'zeroing' methodology to calculate average dumping margins. Where, it has zeroed all the negative dumping margins which have artificially inflated the dumping margins. DSB panels and in some cases Appellate Body has ruled against US authorities.

Similarly, Article 3 has been violated in several instances by the EU and China. Article 3 provides with the injury determination. DSB panel has found in several disputes that the injury calculations by the EU are not consistent with the WTO-ADA. Likewise, China has also tried to misuse the provisions of the Article 3, which has been found inconsistent with WTO laws by DSB.

4.7 Summary

The purpose of the anti-dumping measures was to provide contingent protection to domestic producers of member countries facing a problem of material injury caused by dumping by an exporting country. But unfortunately the use of anti-dumping measures seems to be more protectionist and less of a contingent nature. This chapter establishes that they were used to protect domestic industries from foreign competition. Many studies have observed (a) the anti-dumping investigations are biased towards the domestic petitioners and (b) the investigations are carried out in such a manner that the probability of an outcome being in favour of domestic petitioners is high.

This fact is corroborated by the evidence gathered from the WTO DSB decisions and the appellate body rulings. Several inconsistencies have been observed in the AD applications by the domestic investigating authorities. Some provisions/clauses of member countries' legislations, prima facie, are not compatible with the WTO anti-dumping legal settings. The dispute arises when a member government believes another member government is violating the WTO agreement. The complainant member

country submits a 'request for consultation' at DSB after the identification of the agreement it believes is being violated.

There have been till now 116 such requests for the consultation at DSB of WTO which cite Agreement on Antidumping. Out of the total requests, 43 are still in consultation and 14 have been settled or terminated. Reports have been adopted by the respondents in 18 cases and in 20 cases implementation has been notified by the respondents. Twelve cases are still in the preliminary stage for which a panel not yet been composed or it just composed.

Out of 116 cases, in 50 cases US alone is the respondent followed by EU (13) and China (08). There are only four cases against India. In almost, 50 per cent cases US has been alleged of ADA violations. In majority of the cases complainants are developing countries.

Article level analysis reveals that the Articles mostly cited are such as Art. 1, Art. 2, Art. 3, Art. 5, Art. 6, Art. 9 and Art.12. An article 2.4 of ADA is the most allegedly violated by the respondents, followed by Article 5 and Articles 3 and 6 Therefore has been bone of dispute between the complainant and respondent. The higher incidence of DSB cases concentrated around these articles indicate the potential mishandling of antidumping case on these grounds, which in fact covers almost entire procedure. The DSB Panel has found that the use of articles 2.2, 2.4, 3.2. 3.4 3.5, 5.2 and 6.8 with annex II have been inconsistent with the WTO –agreement.

The analysis of cases where reports or preliminary findings are available reveals many lapses and gaps in the use of AD measures and investigation procedure as a whole. In many cases DSB Panel has expressed grave concerns about the intention of investigating authorities. The conduct of the investigation process itself is designed in such a way that the outcome of it would be biased and favoring the domestic industry.

As far as the compatibility of domestic legislation with the WTO antidumping law is concerned, there are many clauses/provisions added to domestic legislation by some countries which are incompatible with the original WTO law. The clause of 'public interest' in the EU legislation is not consistent with ADA. Similarly, the practice of

'zeroing' the negative dumping margins being practiced very frequently by US as well as EU and has been the most debated and disputed at DSB by the developing countries against the practicing countries. The DSB panel has found in as many as ten disputes that the US has violated and so acted inconsistently with the ADA article 2.4.2 which deals with the comparison between the export price and the 'normal value' The use of 'zeroing' practice itself is a proof of intentions of the practicing countries, especially US. Though US argued in many case that it is consistent with ADA, it is, in fact a violation of ADA. The ambiguity in the ADA and the limited powers of DSB are the root causes of this issue.

Chapter - V

Industry Specific Trade Effects of Indian AD Policy

5.1 Introduction

Traditional measures of protectionism such as tariffs and quotas have sharply lost popularity after the WTO and use of the new protectionist measures such as antidumping duty, countervailing duty, VER etc. has gone up many-folds. Many WTO members cannot raise their tariffs since they are bound by WTO. Therefore, protectionist pressure is often seen through the rampant use of neo-protectionist measures under the label of contingent protection or 'WTO'-legal protection such as antidumping, anti-subsidy (CVD) and safeguard tariffs. Bown (2009) has observed that the WTO member countries have become more active in using trade remedy measures, particularly in the wake of the global economic crisis. The governments of these countries have responded to domestic protectionist pressures by imposing import restrictions during global economic crisis as shown by Evans and Sherlund (2006). After the inception of WTO, contingent protection has evolved into a global phenomenon with an increasing number of countries adopting contingent protection laws and making their use. The bulk of contingent protection falls on the instrument of anti-dumping. Between 1995 and 2014, the number of anti-dumping cases initiated accounted for 86.22 per cent of the total of the three main contingent measures used. The share of CVD remained as small as 6.8 per cent. Safeguards have been the least frequently used measures with their share being only 5.14 per cent over this period. Among the trilogy of trade remedy regimes- countervailing duty, safeguard measures and antidumping actions- antidumping actions are by far the chosen remedy. By the end of 1989, 28 countries adopted antidumping laws. Nearly 1200 actions were initiated between July 1980 and June 1988. Four countries' actions accounted for 97.5% of all actions brought: 30% were brought by producers in the United States, 27% in Australia, 22% in Canada and 19% in EU. Since the early 1980s, the number of countries that adopted an AD law has nearly doubled. While 37 countries had such laws in 1980, this number increased to 93 countries by the end of 2000 (Zanardi, 2004a). The AD proliferation has increased after the formation WTO. The "new adopters", i.e., developing countries have emerged as the dominant users of this instrument. The proliferation does not seem to be confined to any particular region but includes developing countries from Asia, Latin America and Eastern Europe

(Vandenbussche and Zanardi 2009). But after the formation of the WTO the use of antidumping actions has increased surprisingly. What is more developing countries like India and China have overtaken the traditional developed country users such as the EU and US, as the largest users. This new development leads to interesting questions particularly with respect to the use of the antidumping instrument.

The first section of the chapter is about the of genesis and evolution of antidumping regulations. The second part contains a comparative analysis of the trends and patterns in the initiation of anti-dumping investigations from 1995 to 2014. The third part elaborates trends in the imposition of anti-dumping measures by the top ten users during this period. The fourth part deals with the sectors and countries most frequently targeted by anti-dumping measures. The last section analyses Indian antidumping cases and overall Indian experience about antidumping.

There have been several attempts to study the trade effects of antidumping measures. Lichtenberg and Tan (1994) were probably the first to study in United States. They estimated AD effects on aggregate imports, i.e., imports from all the countries and found that the AD measures reduce them. But their study neglected trade diversion, the most important dimension of antidumping measure. Staiger and Wolak (1994) studied this phenomenon extensively. They used disaggregated data and investigated the initiation effect, suspension effect and withdrawal effect of AD investigation on imports and domestic production for AD initiations in US from 1980 to 1985. They found substantial initiation effects on the imports from subject countries. But they did not find any withdrawal effect. However they found evidence of import diversion. Krupp and Pollard (1996) also studied the trade effects of AD initiations in the chemical industry of US from 1976 to 1988. They observed a significant drop in imports during initiation period. Similarly, Prusa (1997) observed that the protection offered by AD law significantly offsets imports from a named country and so gets diverted to Unnamed countries. He in his later study covered 700 cases filed in US between 1980 and 1994 and using product level data, he found evidence of trade destruction effects on imports from Named countries, harassment effect and trade diversion effect to Unnamed countries. Konings et al. (2002) assessed the trade effects of 246 antidumping investigations initiated by the EU during 1985-1990. But they found no significant evidence of import diversion and concluded that the AD policy was more effective in Europe than in the US. Brenton (2001) concluded that AD measures in the EU reduce imports from targeted countries, and trade was diverted to

other suppliers in the EU and to non-targeted suppliers in the rest of the world. Bown and Crowley (2003) emphasized another possible impact of AD protection, which they call “trade deflection.” By this they mean that the countries subject to an AD investigation may shift their sales to other markets to make up for the lost market in the original importing country. Egger and Nelson (2007) also provided empirical evidence suggesting that AD duties negatively affect trade volume and welfare after using a gravity model. Park (2009) empirically evaluated the effects of China’s AD measures on trade and demonstrated that AD protection has significant trade-depressing and trade-diverting effects.

Besedes and Prusa (2016) examined the impact of AD on the ability of a Named supplying country to maintain market presence. They found that AD investigations often drive export suppliers entirely out of the market. They have also estimated the hazard of exports to the U.S. ceasing and found that AD increases the likelihood of a supplier’s exit from the market by more than 50 per cent. They concluded that over the past two decades more than one-quarter of AD duties have exceeded 100% *ad valorem*. It may not be entirely surprising that many AD affected countries are unable to continue to export to the United States (Besedes and Prusa 2016).

Gunnar Niels (2003) has contributed to the empirical literature on antidumping policy, particularly on ‘new’ or emerging antidumping users. He noted that antidumping measures in Mexico had significant trade destruction effects on the Named countries—both in volume and value terms. They are particularly strong for antidumping measures against non-US imports, against developing countries and against the processed food, textile and rubber industries. He found no evidence of trade diversion, i.e., imports from the non-named countries have no statistical relationship with the imposition of antidumping measures (Gunnar Niels 2003).

There are few studies on the effectiveness of Indian AD policy. Ganguli (2008) studied empirically the effect of Indian AD policy on trade flows from other countries for 285 AD petitions filed in India during 1992-2002. He has used product level import data at six digit HS codes. He demonstrated that imports from targeted countries fall significantly and get diverted to Unnamed countries. Aggarwal (2010) studied the trade effects of Indian anti-dumping (AD) policy on 177 (8-digit) products involved in AD initiations during 1994- 2001. She finds that the investigation effects of Indian AD actions are not significant but the imposition of AD duties contains trade in terms of both volume and value as well as raises import prices significantly.

While trade effects start dissipating in subsequent years, import prices from both named and Unnamed countries rose significantly in the post-duty years. The developing trade partner countries suffer significant import losses when named. However, the trade destruction effect is insignificant for developed countries. Even though the unit value of their imports rises, there is no evidence of decline in their trade (Aggarwal 2010).

5.2 Methodology and Data Description

To test the hypotheses and answer the abovementioned questions, the following methods and techniques have been applied:

The data used in this study have been compiled from various secondary sources. To carry out the analysis of trends and patterns in the proliferation of antidumping measures by WTO member countries, data have been compiled from WTO antidumping database and other respective national authorities. For analysis of antidumping measures, we have used actual DSB Panel reports and WTO case law along with the domestic legislations of the respective countries. Till date there have been 113 requests for consultation to the Dispute Settlement Body of WTO. Around 50 requests have been resolved by DSB and some are still in consultations stage. The empirical analysis that is intended in chapters 5 and 6 is based on the methodology that was previously established and used by the Thomas Prusa (1999, 2004), Brenton (2001), Konings et al (2001), Ganguli (2008) and others.

In order to carry out empirical analysis, we have used the Anti-Dumping (AD) database developed by Bown (2010) to collect the details of the dumping cases, i.e, date of initiation, date of duty imposition, AD duty imposed, type of product and country, final duty imposed etc.

The empirical analysis in the thesis is based on the methodology that was previously set and used by the Thomas Prusa (1999, 2004), Brenton (2001), Konings et al (2001), Ganguli (2008) and others. The AD database developed by Bown (2010) has been referred to compile the details of the dumping cases (date of initiation, date of duty imposition, AD duty imposed, type of product and country, final duty imposed etc.). For the empirical analysis of trade effects of AD, 95 antidumping cases from India's major targets (China, US, EU, Thailand, Malaysia, Indonesia, Korea and Japan) having involved in more than ten AD cases initiated between 2003 and 2014 are selected. Total 142 products were involved in these cases. Some initiations/cases have

more than one county (Named countries) and sometimes more than one commodity is involved. The Named countries in each investigation are treated as an independent case so that country-wise and region-wise trade effects can be assessed separately. Some cases have been dropped due to non-availability of data. To get the rich panel, the time series data was constructed for each of the products involved in these cases. The trade data, i.e., import value (in US dollar) and import quantities has been compiled from COMTRADE database constructed by the United Nations Conference on Trade and Development (UNCTAD). The import data have been compiled at six digit HS product classifications from 1999 to 2014 so that we get a window of four years before (t-4) and after (t+4) the initiation of the case. The year of initiation of the case has been set as the base year t_0 .

So, we have a pool of 142 items involved in 95 cases. In the pool, eight cases (15 items) were not affirmative in the final outcome and 87 cases (127 items) were affirmative and so the final antidumping duty which was ad valorem was imposed on them.

The trade effects are assessed for import value, import quantity and unit value separately. The unit values series is obtained by dividing import value by the import quantity. There is a problem of measuring trade effects of antidumping actions based on annual trade data because they correspond to calendar years and not to the actual period of the investigation¹. We have tried to analyze the trade effects by various groups of industries and groups of countries. The following tables provide basic information about the clusters and frequency of observations:

Table 5.1 : Frequency Distribution of Observations by Countries			
Country	Frequency of obs.	Per cent	Items
China	538	40.85	58
E U	190	14.43	20
Korea	135	10.25	15
U S	124	9.42	14
Japan	106	8.05	11
Thailand	91	6.91	10
Indonesia	74	5.62	8
Malaysia	59	4.48	6
Total	1317	100	142
Source: Author's calculations based on the sample data explained in the previous section.			

¹ The annual trade data follow the calendar period, whereas the AD case could be initiated at any point of time during the calendar year.

Table 5.2 : Frequency Distribution of Observations by Level of Development			
Groups	Frequency of obs.	Per cent	Items
Emerging	762	57.86	82
Developed	555	42.14	60
Source: Author's calculations based on the sample data explained in the previous section			

Table 5.3 : Classification of Commodities Based on their use		
Group of commodities	Frequency of obs.	Per cent
Intermediate	927	70
Capital	243	18
Basic	147	11
Total	1317	100
Source: Author's calculations based on the sample data explained in the previous section		

Table 5.4 : Classification by HS Based Industries		
HS based Group commodities	Frequency of obs.	Per cent
Chemicals	626	47.53
Machines	218	16.55
Plastics	152	11.54
Base Metals	147	11.16
Textiles	90	6.83
Cement, Ceramic, Glass	34	2.58
Vehicles other than railways and trams etc.	25	1.9
Minerals	16	1.21
Papers	9	0.68
Total	1317	100
Source: Author's calculations based on the sample data explained in the previous section.		

5.3 Econometric Model Specifications

As explained above, the dataset used for the econometric analysis is a pooled data of 95 antidumping cases initiated in the period 2003-2014 by Indian authorities. The data has been truncated so as to get minimum nine annual observations for each investigation, four years before the initiation, the year of initiation itself, and four years after the year of initiation. This has allowed to estimate trade effects of both duty imposition and initiation of investigation on dependent variables, i.e., import value, import quantity and unit value of imports from both Named and Non-named countries.

Since the data constructed for the analysis is a dynamic panel, the dynamic panel data model proposed by Arellano and Bond have been considered. Considering all the econometric problems that may be faced in the use of Fixed Effect and Random effect models, Arellano and Bond has proposed the two step system generalized method of moment (GMM) instrumental panel estimator. To capture the lag effect of AD policy, the model has considered lagged values of the dependent variables in all the three cases, i.e., import value, import quantity and unit value of imports. Three separate models have been estimated for three dependent variables. The estimated equations could be expressed in the following general form:

$$y_{it} = \alpha_1 y_{i,t-1} + \alpha_2 y_{i,t-2} + x'_{it} \beta + u_{it} \quad \text{-----(1)}$$

Here, y_{it} is the dependent variable and it takes three different variables (i.e. import value, quantity and unit value) in three distinct models. In all the three models $y_{i,t-1}$ and $y_{i,t-2}$ are the lagged values of the dependent variable. The α_1 and α_2 are scalars and β is a $K \times 1$ vector. The x'_{it} is the $1 \times K$ vector of explanatory variables. The year dummies (i.year) have been incorporated in the model as a control variable for de-trending. It is assumed that the error u_{it} , follows one-way error component model as follow.

$$u_{it} = \mu_i + v_{it} \quad \text{-----(2)}$$

Where, $\mu_i \sim \text{i.i.d.}(0, \sigma_\mu^2)$ and $v_{it} \sim \text{i.i.d.}(0, \sigma_v^2)$ are independent of each other and among themselves. The cross-section is identified by the case ID and the time-series by the

annual observations on import trade before and after the AD initiation i.e. initiation year.

Since y_{it} is a function of μ_i , the lagged dependent variable $y_{i,t-1}$ is also a function of μ_i . And therefore, $y_{i,t-1}$ a right hand regressor in above equation is correlated with the error term. This makes the ordinary least squares (OLS) estimator biased and inconsistent even if the v_{it} are serially uncorrelated. The standard way of estimating the above type of equation via the fixed-effects (FE) estimator eliminates μ_i , but the FE estimators will be biased and potential inconsistent since $y_{i,t-1}$ will be correlated with the FE-transformed residual by construction. A similar problem exists for the second lag ($y_{i,t-2}$) of the dependent variable.

Arellano and Bond (1993) put forward a two-step GMM estimator that gives consistent estimates, assuming there is no second order serial correlation among the errors. To obtain consistent estimate of α_1 , α_2 and β , we can take a first difference of above equation to eliminate the individual country-specific effect μ_i which gives the following equation:

$$y_{it} - y_{i,t-1} = \alpha_1(y_{i,t-1} - y_{i,t-2}) + \alpha_2(y_{i,t-2} - y_{i,t-3}) + (x'_{it} - x'_{i,t-1})\beta + (v_{it} - v_{i,t-1}) \quad (3)$$

The model suffers by construction from the correlation between the $y_{i,t-1}$ and $y_{i,t-2}$ and the transformed residuals ($v_{it} - v_{i,t-1}$). Consequently, we must estimate the transformed equation with instrumental variable. There are multiple moment conditions that can be exploited to derive instruments. For all time periods, both $y_{i,t-3}$ and lagged values of x'_{it} are valid instruments. Arellano and Bond (1991) argue that additional instruments can be obtained if one utilizes the orthogonality conditions that exist between lagged values of y_{it} and the disturbances v_{it} (Ganguli 2008).

Arellano and Bond (1991) proposed a test for the null hypothesis of no second-order serial correlation between the errors of the first-differenced equation. The importance of this test arises because the consistency of the GMM estimator relies on the condition that $E[\Delta v_{it}, \Delta v_{i,t-1}] = 0$. This hypothesis is true if the v_{it} are not serially correlated or follow a random walk. Under the latter situation, both OLS and GMM of the first-differenced version of (1) are consistent, and Arellano and Bond (1991)

suggest a Hausman-type test based on the difference between the two estimators. Additionally, they suggest Sargan's (1958) test of over-identifying restrictions. However, a "robust" version of the Arellano–Bond test has been used and that assumes heteroskedastic errors, and hence do not report the Sargan test statistic.

The Fundamental model Specifications used for the estimations is as follow

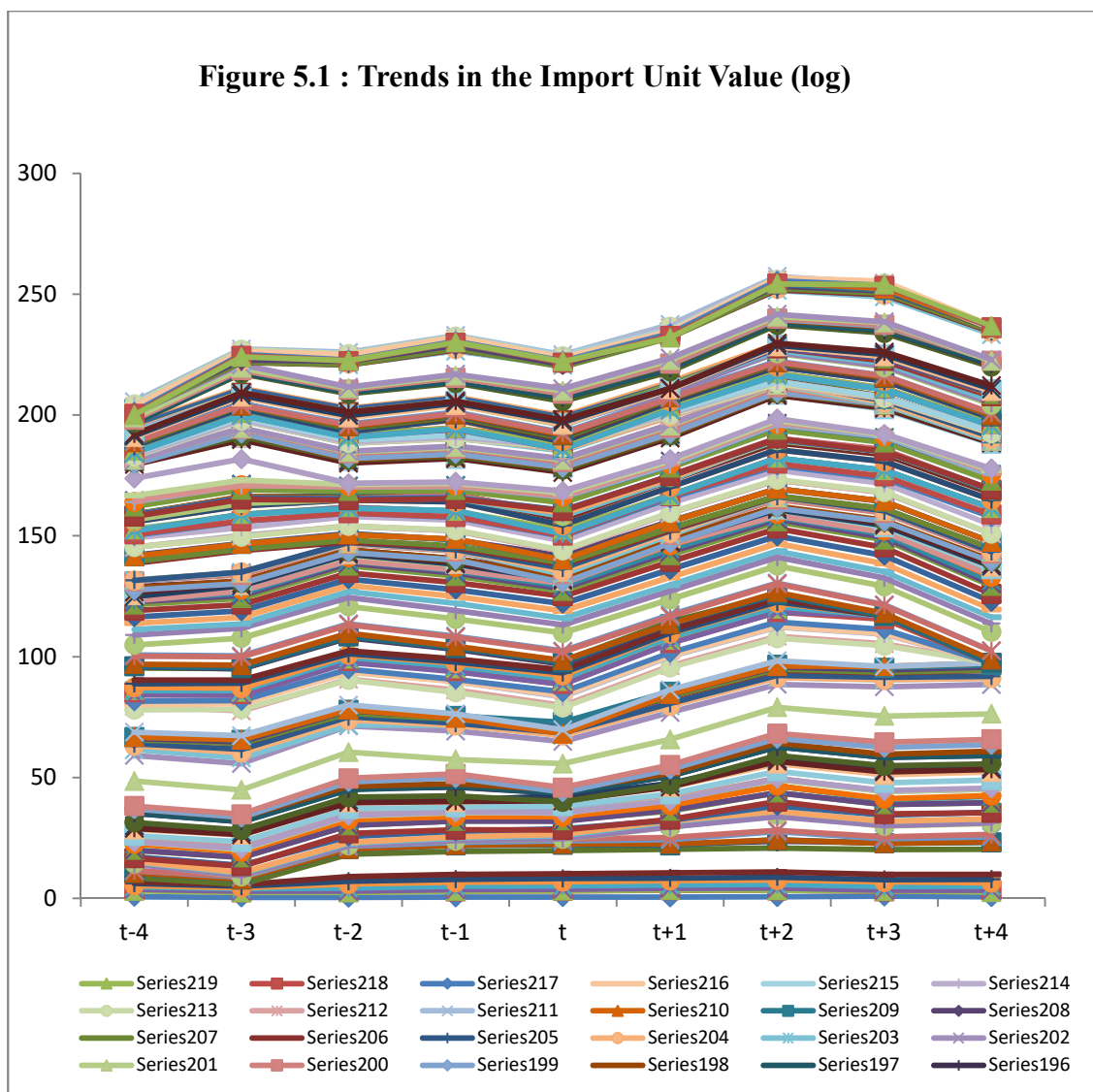
$$\ln x'_{it} = \alpha_1 \ln y_{i,t-1} + \alpha_2 \ln y_{i,t-2} + \alpha_3 d_{ini} + \alpha_4 d1_{ini} + \alpha_5 d1_{aduty} + \alpha_6 d2_{aduty} + \alpha_7 d3_{aduty} + \alpha_8 d4_{aduty} + \alpha_9 i. year + \varepsilon_{it}$$

The dependent variable $\ln x'_{it}$ takes three different values in the three different models, i.e., the log of value of imports, the log of quantity and the log of unit value in respective models for case i at time tk ($k = 0, 1, \dots, 5$). The time has been normalized in such a way that the dummy d_{ini} refers to the period of the initiation of the case and $d1_{ini}$ to the period of investigation which is the first year after initiation, while dummies $d1_{aduty}$, $d2_{aduty}$, $d3_{aduty}$ and $d4_{aduty}$ refer to the years following the outcome of the case (after the duty imposition) and assume value 1 for that particular year and 0 otherwise. Theoretically, we expect to obtain negative effects of antidumping policy on the import of product i for the Named countries and a positive effect for Unnamed countries (implying the incidence of *trade diversion* from Named country to the Unnamed countries). The explanatory variables on the right-hand side of above equation include the two immediate lags of the value of imports prior to the initiation of the case in period $t-1$ and $t-2$ respectively. The reason for inclusion of these lags as independent variable is to control the size effects of initial imports and to capture the progress of imports prior to an antidumping initiation. To capture the duty effects, another explanatory variables, i.e. interaction dummy of actual duty and the year dummies ($d1_{aduty} * \ln_f_ad_duty$) is incorporated. These terms capture the staggered effect of the duty in the years following the initiation of a case. Thus, for example, for each case i , the term ($d1_{aduty} * \ln_f_ad_duty$) equals the value of the duty if the year is $t = 1$, while it is zero in all other years. Finally, we include calendar year dummies ($I. Year$) in the estimation to control for macroeconomic trends. This could be relevant if firms are more likely to file a petition during recession, when dumping and injury are more likely to be demonstrated.

Separate equations are estimated for import value, quantity and unit value, Named and Unnamed countries, emerging and developed countries and also for the different groups of cases as used based classification, i.e., consumer good, intermediate goods, basic goods and capital goods and HS classification based industries such as base-metals, papers, chemicals and plastics, textiles and minerals, etc. The variable d_ini is a dummy that takes the value of 1 for the year of initiation for each case. This variable tests the harassment effect of antidumping investigations.

5.4 Trade Effects on Overall Imports Depict through Diagrams

This section of the chapter deals with the descriptive analysis of trade effects on total imports in dumped commodities. First, we try to see the effects on the unit prices of imports, second changes in the import quantity and finally the total import value which is the consequence of import price and quantity. The unit value is derived by dividing total import value by total import quantity. Since there are many variations in the values, we have taken the natural log to reduce the extreme variations in values. Following figures give trends for nine years, arranged in a way to show four years before and four years after the antidumping initiations. 't' is the year of initiation and t+1 is one year of initiations which is normally a year of duty imposition.

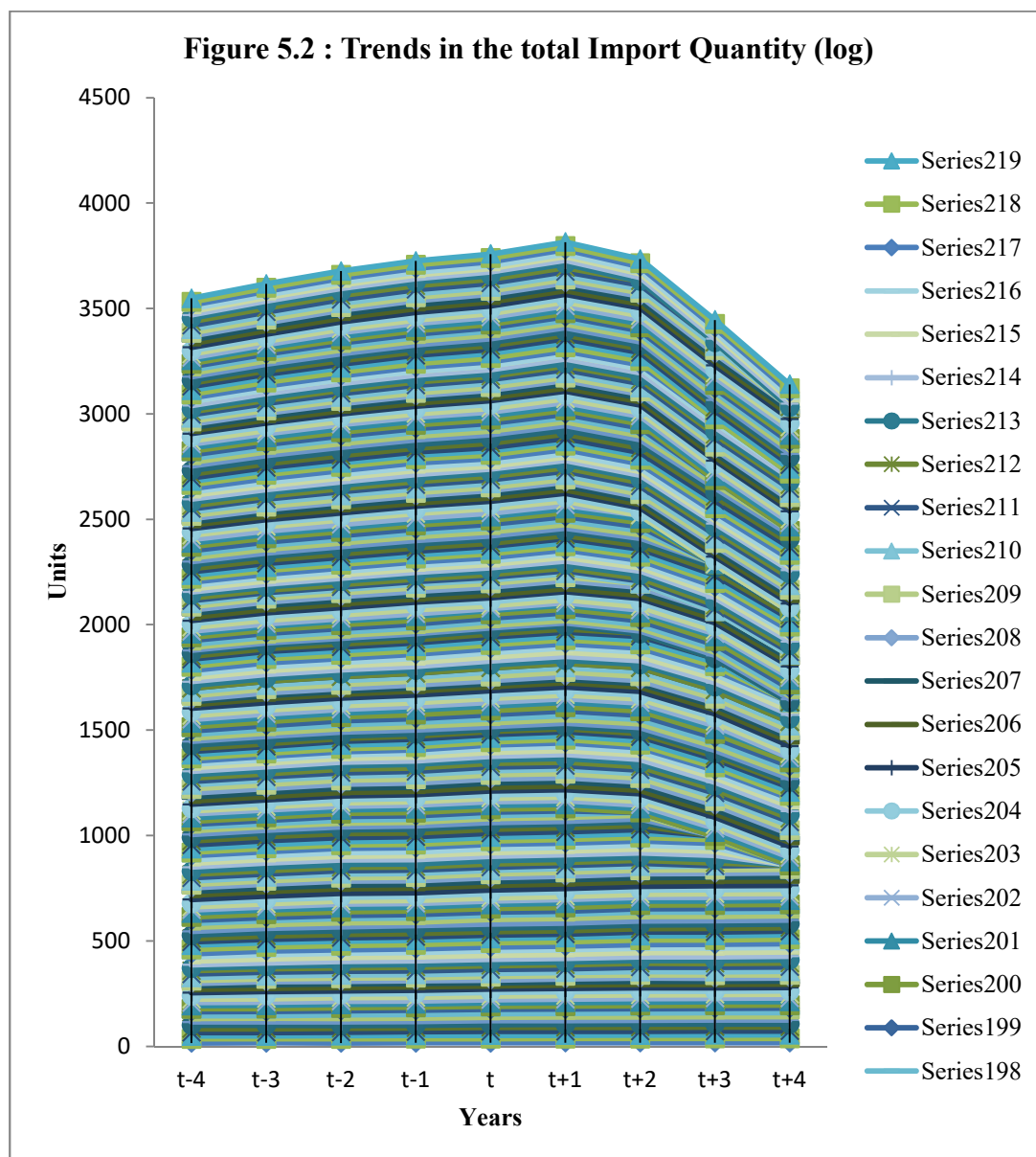


Source: Compiled and calculated by the author from COMTRADE data base.

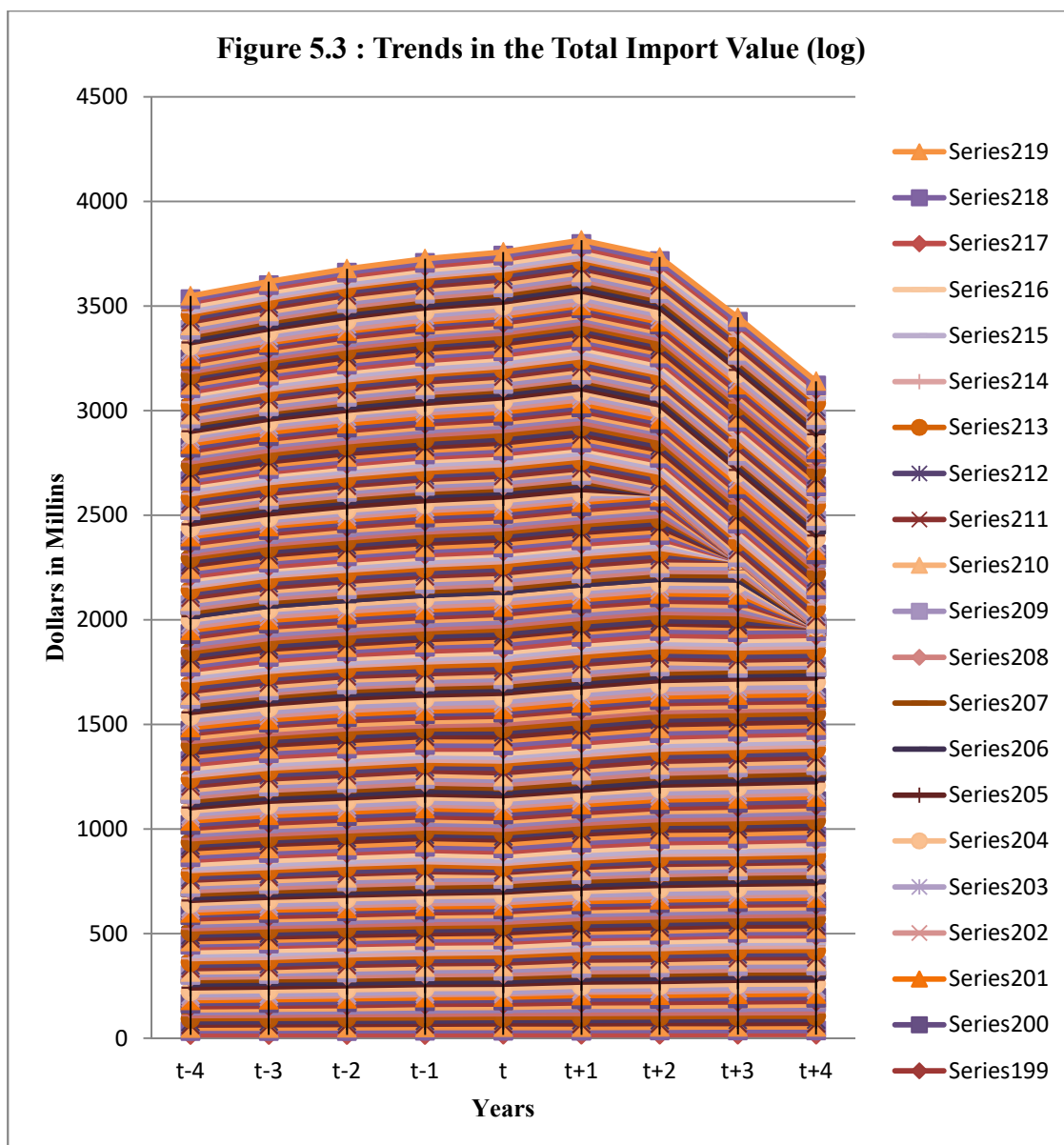
It's clear from the above figure that except for few years, the unit value of imports falls slightly before the initiations year t-1 and increases after the initiation. It increases sharply after t+1 till t+2 and then starts falling for the obvious reason that the duty is imposed after the initiation/ investigation period. Considering a lag in the effects, the trade effects on unit price arise after a lag.

Any increase in the import price leads to a welfare loss. This investigation stage of dumping actions leads to an impact on imports, though this is often measured by the effect on quantities rather than prices (Feenstra 2002). Staiger and Wolak (1992) using a sample of all antidumping cases in the United States from 1980-85 find that the initiation of an investigation has a substantial impact on imports, reducing them by

as much as about one-half that would have occurred under duties. The implication is that import prices must increase, leading to a loss for the importer.



Source: Compiled and calculated by the author from COMTRADE data base.



Source: Compiled and calculated by the author from COMTRADE data base.

5.5 Data and Expected Signs of Variables

Data used here are in the form of unbalanced panel of yearly import data of 142 products involved in 95 dumping investigations during 2003-2012 at six digit HS codes over the 2000-2014 period. Each case has a minimum of four years before the investigation, and four years after the investigation and duty imposition. There are three separate models of the similar general form as explained by equation above for import value, import quantity and import unit value. The variable wld_val represents India's total import of dumped product j from the world in a year t . The yearly import data (in US dollar) has been compiled from the COMTRADE database of UN. Theoretically the dependent variable has a cumulative effect of its own lag and it gets

positively affected by its own lagged period values and that may cause Heteroscedasticity. To overcome this problem natural logarithm of the dependent variables, i.e., import value, import quantity and unit value have been taken. In the case of observations with zero imports, it is assumed that 1 takes the natural logarithm of whole series. Variables d_ini , $d1_ini$, $d1_duty$, $d2_duty$ etc. are dummy variables which allow us to examine the ‘initiation effects’, ‘imposition effects’ and ‘duty effects’ of Indian AD actions against all the dumping countries. Staiger and Wolak (1994), Prusa (2001) and others have pointed out that the AD investigation process itself alone reduced overall US imports of subject products, especially from Named countries. So as per theory and previous empirical research the expected signs of all the above mentioned dummies must be negative. There are three possible outcomes of an AD action. One, prices and hence dumped imports remain insensitive to the AD actions. Two, prices rise and dumped imports are restricted, but imports from Unnamed countries rise so as to neutralize any decline in dumped imports. Three, prices rise and overall imports (imports from both Named and Unnamed countries) are restricted (Aggarwal 2013). In the case of first scenario, AD action remains ineffective in altering either prices or imports. In the second case, the prices of Named imports rise but overall imports remain unaltered due to trade diversion. The domestic industry benefits due to the price rise but the economy reaps no benefits in terms of controlling the import surge. The third outcome brings benefits to both domestic producers and the economy by improving the balance of trade (Aggarwal 2013). Theoretically, the trade effects of the country’s AD actions are classified as investigation effects, trade destruction effects, trade deflection effect and trade diversion effect. The trade investigation effects and trade destruction effects on aggregate imports in subject commodities are analyzed here.

The results presented here are about the signaling effects, initiation effects and imposition effects. Duty effects are broadly termed as investigation and trade destruction effects. The paper is arranged in four parts. The first part deals with overall trade effects, where, we analyze the trade destruction effects on India’s imports of the commodities involved in the investigations. The trade destruction effects are further disaggregated into industry specific effects (use based and HS base classifications) and also into region specific effects.

The models used for regression analysis are semi log models (log-linear) where dependent variable is in logarithmic form and independent variables (here it is dummy

variable) are in non-log form. Hence, interpretations of the beta coefficients of dummy variables are done after the conversion of coefficients into percentage term as per the conversion methodology given by Gujarathi (2003)². The expected signs of the coefficients are given in the Table A below.

Table A of Expected Signs			
Variables	Import Value	Import Quantity	Unit value
	Model 1	Model 2	Model 3
d_ini	+/-	+/-	+/-
d1_ini	-	-	+
d1_aduty	-	-	+
d2_aduty	-	-	+
d3_aduty	-	-	+
d4_aduty	-	-	+

5.6 Overall investigation and trade destruction effects:

1. Signaling Effect, Initiation Effect and Imposition Effect

The results presented in Table 5.5 are basically three different regressions run separately. Since the basic structure of the model is the same, it is presented in one table. The dependent variables in these models are India's import value, import volume and unit value of import of the subject commodities from the world. So all the three signaling, initiation and imposition effects are analyzed through the import value, import quantity and unit price.

² Basic Econometrics, Damodar Gujarathi, Appendix 9 A1.

Table 5.5 : Signaling Effect, Initiation Effect and Imposition Effect			
Variables	Import Value	Import Quantity	Unit value
	Model 1	Model 2	Model 3
\ln_wld_val (qty) (unit_val) ³			
L.ln_wld_val (qty) (unit_val)	0.252*** (5.262)	0.361*** (6.651)	0.326*** (4.127)
L2.ln_wld_val (qty) (unit_val)	0.150*** (3.140)	0.0445 (1.035)	0.0789* (1.878)
d_ini	-0.0157 (-0.220)	-0.00877 (-0.109)	-0.0623 (-0.975)
d1_ini	-0.151* (-1.928)	-0.0304 (-0.303)	-0.111 (-0.950)
d1_aduty	0.142*** (3.239)	0.0123 (0.230)	0.157*** (3.201)
d2_aduty	0.164*** (2.779)	-0.0489 (-0.941)	0.194*** (2.937)
d3_aduty	0.146** (2.052)	0.0755 (1.099)	0.191** (2.446)
d4_aduty	0.0683 (0.890)	-0.00872 (-0.150)	0.227** (2.421)
Constant	9.673*** (13.97)	9.022*** (8.987)	0.626*** (2.819)
Year Dummy (i. year)	YES	YES	YES
Observations	892	845	845
Number of id	141	136	136
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 Note:-Year dummies have been taken into model as a control variable for trend			

Results presented in Table 5.5 do not show any indication of significant signaling and initiation effects on the unit prices and import volume. But the signs of coefficients are negative indicating that there could be some effects in selected cases. As far as import value is concerned, there is a significant decrease (24.60%) in the import value during the investigation period (*d1_ini*). But the overall results of regressions are not consistent with the earlier empirical studies. Rather they are differing from what Prusa, Ganguli, Aggarwal and many others have observed. They have found that the AD initiations reduce import value significantly during all the stages, i.e., pre-initiations, during investigations and after final duty imposition. But what appears from the above results is that there is some initiation effect in the first year of initiation. But after the second year of initiation, i.e., after the duty imposition, trade

³ For the presentation of results in a single table it has been arranged as (val) for Import value as the dependent variable in model 1, (qty) is the import quantity as the dependent variable in model 2 and unit_val are the unit values in model 3.

value increased significantly because there is no significant change in the quantity imported but the unit price has shown a significant increase. The unit prices increased by 17% in the first year after the imposition of duty and this effect lasts till four years. Theoretically, the trade value falls because the unit prices tend to go up after the imposition of duty and thereby reduces the quantity imported. But it depends on the elasticity of imports. Evidences suggests that the import demand for intermediate and capital goods is less responsive to change in prices (hence to AD duty) than the import demand for consumer goods. While the price elasticity of imports for consumer goods is -1.59, for capital goods it is -0.51 and for intermediates/inputs -0.56 (Virmani et al. 2004). Since there are no consumer goods in our sample and the sample contains more of intermediate goods and capital goods and hence the import volume does not respond to the price increase.

2. Duty effects

The results in table 5.6 are consistent with the results showed in Table 5.1, where the model measured only duty imposition effect. But this model allows us to measure the actual duty effect. To capture the duty specific effects, we have used interaction dummies where we have interacted after duty dummies by the actual dumping duty.

At the same time, we have kept earlier 'after imposition' dummies to control the duty imposition effect. Thus, this model gives us actual duty effects. The duty effects on unit price are very significant. The unit price shows a significant rise during all the four year after the imposition of duties. Though the larger share of effects has been already captured by the earlier imposition dummies, in all the years duty effect is significant. The prices of goods subject to duty imposition increase significantly and due to the rise in unit prices the quantity of imports has decreased in the first two years (negative signs) but surprisingly increased in the third and fourth years.

Table 5.6 : Duty Effects			
Variables	Import Value	Import Quantity	Unit Price
	Model 1	Model 2	Model 3
ln_wld__(val) (qty) (unit_val)#			
L.ln_wld__(val) (qty) (unit_val)#	0.244*** (5.010)	0.339*** (6.059)	0.319*** (3.947)
L2.ln_wld__(val) (qty) (unit_val)#	0.141*** (2.984)	0.0339 (0.783)	0.0710* (1.805)
d1_aduty	0.115*** (2.587)	0.0318 (0.702)	0.130*** (3.083)
d2_aduty	0.125** (2.355)	-0.0330 (-0.727)	0.168*** (2.989)
d3_aduty	0.124* (1.950)	0.0606 (0.932)	0.203*** (2.912)
d4_aduty	0.0637 (0.980)	-0.0142 (-0.246)	0.248*** (3.093)
adduty_d1a_imp	-0.00338 (-0.720)	-0.00947 (-1.536)	0.0105** (2.386)
adduty_d2a_imp	0.00876** (2.474)	-0.00608 (-1.146)	0.0178*** (4.022)
adduty_d3a_imp	0.00943* (1.656)	0.0105* (1.835)	0.00765* (1.924)
adduty_d4a_imp	0.00928 (1.410)	0.00312 (0.510)	0.0168*** (3.860)
Constant	9.961*** (14.03)	9.059*** (8.709)	0.634*** (2.896)
Year Dummy (I.Year)	YES	YES	YES
Observations	892	845	845
Number of id	141	136	136
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 # Model 1-Value, Model 2-Quantity, Model 3-Unit Value Note:-Year dummies have been taken into model as a control variable for trend			

As far as the duty effect on import value is concerned, it is a function of unit prices and import quantity. Therefore, it has decreased along with the quantity in the first year of duty imposition. But it shows a significant increasing trend in the subsequent years.

5.7 Industry-Specific Trade Effects: Use Based Classification

Previous studies analyzing the trade effects of antidumping duties have not focused on their industry specific effects. Almost all of them have demonstrated that antidumping duty protection has significant trade depressing and trade diverting effects. The antidumping tool fundamentally discriminates in terms of both countries and industries. This is because antidumping duties are imposed on the imports of specific goods from targeted countries. Imports of the same good from non-targeted countries and even imports of other similar products are not subject to such duty. In this regard, antidumping measures are understood as a policy tool to protect the targeted industries of the importing country rather than all industries in the country. (Kang, Lee, Park 2012)

The AD filings of most frequent AD users, such as US, the EU and China fluctuates across industries and concentrate simply on a small number of industries. It implies that these countries would have their own target industries to protect by *Fingee et al* (1982), Hansen (1990), Moore (1992) and Evans & Sherlund (2006). As is known to US and EU have actively utilized AD duties primarily in the steel industry, while China and India have utilized AD duties primarily in the chemical and plastic industries. Nevertheless, earlier studies have not distinguished the trade effects between the industries except by Moonsung Kang et.al (2012).

Moonsung Kang et.al (2012) have attempted to fill this gap by estimating the industry specific effects of AD duties on trade. They have selected and analyzed metal/steel, chemical and plastic/rubber industries of three frequent AD users i.e. US, EU and China. They have detected positive evidence of industry specific impact of AD measures. But the limitation of their study is that they selected frequently targeted industries from those countries and are classified on the basis of HS code. In this section, an attempt has been made to work on the limitations of his study.

An attempt has been made to analyze the trade effects of AD on the industries classified on the basis of their use i.e., consumer goods, basic goods, capital goods and intermediate goods⁴. This allows us to assess the impact of AD according to the use based groups of commodities which differ in import elasticity and nature. Therefore, there is a possibility that each group may have different effects of the AD

⁴ The classification is taken from the Ministry of Statistics and Programme Implementation.

measures. Further we have extended this analysis to the industries classified by HS codes as attempted in Moonsung kang et. al (2012). This allows us to compare effects on both use based classified and HS code-based classified industries.

1. Trade Effects on the Industries (Use- Based Industry Classification)

The results model 1-import value, model 2-import quality, and model 3- unit value estimated separately are presented in the Table 5.7. This analysis is limited to only three types of goods, i.e., basic, capital and intermediate goods. Because there was only one observation of consumer goods, it has been excluded from the analysis. Each model for all the three dependent variables has been run separately for three groups. So in total we have nine panels regression output to analyze industry specific results. The initiation and imposition effects have been controlled by keeping after initiation dummies in the model as a control variable. To capture industry specific effects, the interaction dummies where after initiation (d1_ini) and after imposition (d1_aduty, d2_aduty....) dummies have been interacted with specific group dummies (d1_ini_bas for basic goods, d1_ini_cap for capital goods and so on) .

So far as the initiation effect is concerned, prices of basic and capital goods fell significantly during the investigation period. The unit value of basic goods fell by 34.44 per cent, whereas for capital goods was by 53.57 per cent. But there is no significant change in the unit prices of intermediate goods (which are mostly chemical goods and minerals). There is no significant effect observed in the import quantity of basic goods during investigations but their import value dropped by 29 per cent. Similarly, there is no investigation effect seen in the quantity of capital goods. But the gross import value dropped heavily (37 per cent). Relatively there is little investigation effect on the import quantity and import value of intermediate goods.

Table 5.7 : Industry-Specific Trade Effects (Use-Based Industry)			
Variables	Value	Quantity	Unit Price
	Model 1	Model 2	Model 3
ln_wld_(val) (qty)(unit_val)#			
L.ln_wld_(val) (qty)(unit_val)#	0.244*** (4.445)	0.380*** (6.596)	0.291*** (3.202)
L2.ln_wld_(val) (qty)(unit_val)#	0.165*** (3.110)	0.0453 (1.048)	0.0484 (1.087)
d1_ini_bas	-0.254** (-2.015)	-0.00868 (-0.0428)	-0.296** (-2.227)
d1_aduty_bas	-0.197* (-1.703)	-0.292 (-1.439)	0.0115 (0.0885)
d2_aduty_bas	-0.238 (-1.622)	-0.294 (-1.270)	0.0335 (0.212)
d3_aduty_bas	0.116 (0.685)	0.145 (0.857)	-0.117 (-1.004)
d4_aduty_bas	-0.166 (-0.763)	0.132 (0.900)	-0.387** (-2.420)
d1_ini_cap	-0.315*** (-3.533)	0.104 (0.403)	-0.429* (-1.822)
d1_aduty_cap	0.305** (2.341)	-0.111 (-0.613)	0.327** (2.108)
d2_aduty_cap	0.100 (1.075)	-0.153 (-0.942)	0.199 (1.099)
d3_aduty_cap	-0.0650 (-0.733)	-0.531*** (-2.585)	0.486** (2.416)
d4_aduty_cap	-0.106 (-1.088)	-0.346*** (-2.589)	0.376** (2.100)
d1_ini_inter	-0.0975* (-1.806)	-0.0421 (-0.511)	0.0297 (0.348)
d1_aduty_inter	0.147*** (2.814)	0.0914 (1.397)	0.113** (2.189)
d2_aduty_inter	0.233*** (3.571)	0.0223 (0.383)	0.171** (2.518)
d3_aduty_inter	0.168** (2.085)	0.210** (2.448)	0.0980 (1.288)
d4_aduty_inter	0.0930 (1.109)	0.0561 (0.754)	0.163* (1.772)
Constant	9.561*** (13.50)	8.274*** (7.591)	1.131*** (4.783)
Year dummy (i. year)	YES	YES	YES
Observations	892	845	845
Number of id	141	136	136
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 # Model 1-Value, Model 2-Quantity, Model 3-Unit Value Note:- Year dummies have been taken into model as a control variable for trend			

Though, the unit prices of basic goods dropped significantly during investigation period, there is no further significant change in the unit prices during the first three years after the duty imposition. But in the fourth year prices decreased by 46.37 per

cent. The import value of basic goods decreased in the first year after the imposition of duty. But except this year there is no significant imposition effect.

In the case of capital goods, there was trade depressing effects during investigation period. The unit prices have gone up after the imposition of duty (39 per cent to 62 per cent). Though there is no significant drop in the import quantity during the first and second years after the imposition of duty, signs of the coefficients are still negative. But import quantity drops significantly during the third and fourth years after the duty imposition. Nevertheless, import value remained unchanged though the coefficients are negative.

As far as intermediate goods are concerned, the unit prices increased significantly after the imposition. But surprisingly, no drop in quantity is seen. Consequently, the import value has increased significantly during first three years after the duty imposition.

Thus, that there are no trade depressing effects of antidumping duty imposition but there is investigation (harassment) effect and trade drops significantly during the initiation and investigation period for basic goods.

Due to the inelastic demand for imports of capital goods, the import quantity does not fall during first two years of imposition but in the third and fourth years it goes down heavily. Thus, both initiation and duty imposition have trade destruction effects on the imports of capital goods. There are more cases of intermediate goods in the sample than the basic and capital goods together, and therefore it has influenced results of overall trade. Though the AD policy has been effective in raising the unit prices, it has failed to provide contingent protection to the domestic suppliers of the intermediate goods.

Just for the sake of comparability, I have run the separate regressions for each of the commodity group keeping other commodities constant. It enables us to compare among the three commodities groups and helps us to understand the relative effects on each category. The following tables show the results of these relative regressions for all the three categories. Though this was possible with regression of any one group of commodity, but for better understanding and clarity it has been done separately for all the groups.

Table 5.8 : Relative Trade Effects of Use -Based Industry (value)			
Varibales	Basic	Capital	Intermediate
	Model 1	Model 2	Model 3
ln_wld_val (Basic, Capital, Intermediate)#			
L.ln_wld_val (Basic, Capital, Intermediate)#	0.247*** (4.886)	0.246*** (4.676)	0.256*** (5.085)
L2.ln_wld_val (Basic, Capital, Intermediate)#	0.148*** (3.173)	0.164*** (3.026)	0.157*** (3.087)
d1_ini	-0.111** (-1.996)	-0.121** (-2.453)	-0.297*** (-3.548)
d1_aduty	0.189*** (4.185)	0.0957** (1.996)	0.0746 (0.754)
d2_aduty	0.224*** (3.775)	0.154** (2.559)	-0.0395 (-0.478)
d3_aduty	0.147** (2.036)	0.160** (2.106)	0.0140 (0.165)
d4_aduty	0.0936 (1.224)	0.0611 (0.738)	-0.124 (-1.384)
d1_ini_bas (Basic, Capital, Intermediate)#	-0.105 (-0.791)	- 0.223*** (-2.948)	0.205** (2.441)
d1_aduty_bas (Basic, Capital, Intermediate)#	- 0.362*** (-3.079)	0.195 (1.396)	0.0753 (0.639)
d2_aduty_bas (Basic, Capital, Intermediate)#	- 0.423*** (-2.721)	-0.0451 (-0.443)	0.266*** (2.672)
d3_aduty_bas (Basic, Capital, Intermediate)#	0.00211 (0.0124)	-0.208** (-2.027)	0.152 (1.512)
d4_aduty_bas (Basic, Capital, Intermediate)#	-0.233 (-1.094)	-0.150 (-1.294)	0.220** (2.160)
Constant	9.802*** (14.36)	9.526*** (13.09)	9.405*** (13.11)
Year dummy (i.year)	YES	YES	YES
Observations	892	892	892
Number of id	141	141	141
Robust z-statistics in parentheses			
*** p<0.01, ** p<0.05, * p<0.1			
#Model 1-Basic goods, Model 2- Capital goods, Model 3- Intermediate goods			
Note:-Year dummies have been taken into model as a control variable for trend			

Table 5.9 : Relative Trade Effects of Use-Based Industry (Quantity)			
Variables	Basic	Capital	Intermediate
	Model 1	Model 2	Model 3
ln_wld_qty (Basic, Capital, Intermediate)#			
L.ln_wld_qty (Basic, Capital, Intermediate)#	0.368*** (6.869)	0.377*** (6.375)	0.378*** (6.901)
L2.ln_wld_qty (Basic, Capital, Intermediate)#	0.0520 (1.226)	0.0362 (0.836)	0.0458 (1.096)
d1_ini	-0.0197 (-0.231)	-0.0299 (-0.384)	0.0519 (0.345)
d1_aduty	0.0561 (0.980)	0.0314 (0.527)	-0.227* (-1.645)
d2_aduty	-0.00931 (-0.185)	-0.0322 (-0.563)	-0.259* (-1.868)
d3_aduty	0.0595 (0.790)	0.202*** (2.686)	-0.284* (-1.945)
d4_aduty	-0.0200 (-0.330)	0.0604 (0.880)	-0.237** (-2.411)
d1_ini_bas (Basic, Capital, Intermediate)#	0.00698 (0.0311)	0.117 (0.481)	-0.0922 (-0.622)
d1_aduty_bas (Basic, Capital, Intermediate)#	-0.334 (-1.575)	-0.141 (-0.707)	0.322* (1.897)
d2_aduty_bas (Basic, Capital, Intermediate)#	-0.271 (-1.113)	-0.107 (-0.610)	0.277* (1.742)
d3_aduty_bas (Basic, Capital, Intermediate)#	0.0929 (0.486)	- 0.718*** (-3.139)	0.505*** (2.813)
d4_aduty_bas (Basic, Capital, Intermediate)#	0.145 (0.903)	- 0.408*** (-2.623)	0.305** (2.514)
Constant	8.362*** (8.149)	8.440*** (7.815)	8.290*** (7.959)
Year dummy (i.year)	YES	YES	YES
Observations	845	845	845
Number of id	136	136	136
Robust z-statistics in parentheses			
*** p<0.01, ** p<0.05, * p<0.1			
#Model 1-Basic goods, Model 2- Capital goods, Model 3- Intermediate goods			
Note:-Year dummies have been taken into model as a control variable for trend			

Table 5.10 : Relative Trade Effects of Use-Based Industry (Unit Price)			
Variables	Basic	Capital	Intermediate
	Model 1	Model 2	Model 3
In_unit_val (Basic, Capital, Intermediate)#			
L. In_unit_val (Basic, Capital, Intermediate)#	0.320*** (3.851)	0.303*** (3.350)	0.298*** (3.482)
L2.In_unit_val (Basic, Capital, Intermediate)#	0.0695* (1.688)	0.0601 (1.316)	0.0551 (1.221)
d1_ini	-0.0118 (-0.122)	-0.0274 (-0.350)	-0.354** (-2.343)
d1_aduty	0.183*** (3.512)	0.0998** (2.019)	0.199* (1.805)
d2_aduty	0.223*** (3.360)	0.151** (2.318)	0.176 (1.353)
d3_aduty	0.246*** (2.980)	0.0652 (0.894)	0.299** (2.333)
d4_aduty	0.297*** (3.139)	0.106 (1.208)	0.237* (1.679)
d1_ini_bas (Basic, Capital, Intermediate)#	-0.234 (-1.572)	-0.425** (-2.175)	0.377*** (3.044)
d1_aduty_bas (Basic, Capital, Intermediate)#	-0.149 (-1.070)	0.211 (1.185)	-0.0861 (-0.677)
d2_aduty_bas (Basic, Capital, Intermediate)#	-0.150 (-0.913)	0.0343 (0.173)	-0.00293 (-0.0202)
d3_aduty_bas (Basic, Capital, Intermediate)#	-0.300** (-2.192)	0.403* (1.789)	-0.197 (-1.379)
d4_aduty_bas (Basic, Capital, Intermediate)#	- 0.596*** (-3.467)	0.260 (1.257)	-0.0744 (-0.506)
Constant	0.701*** (3.108)	0.612*** (2.863)	0.661*** (3.042)
Year dummy	YES	YES	YES
Observations	845	845	845
Number of id	136	136	136
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 #Model 1-Basic goods, Model 2- Capital goods, Model 3- Intermediate goods Note:-Year dummies have been taken into model as a control variable for trend			

Results presented in the above three tables support the results of previous regressions and at the same time give us more clarity. As far as actual duty effects are concerned, the trade of basic goods dropped significantly after the duty imposition. But the trade value does not fall significantly after the imposition for capital goods and intermediate goods. This might have happened due to the major effects that have been captured in the initiation and imposition and so there is very little duty effects.

5.8 Trade Effects by HS Classified Group of Commodities

To evaluate the industry specific trade effects, industries have been classified on the basis of HS codes. Domestic interest groups lobby expects the government to initiate antidumping investigation against a specific industries group. As noted in Davis (2009), the principal targets of EU's antidumping policy are exporters in emerging economies, particularly Asian countries exporting specific commodities groups. Similarly, US producers of steel products demanded the US government to initiate AD investigation against the steel exporters. Analysis of Indian cases also reveals that the Indian authorities have targeted some specific industry groups such as chemicals, base metals, plastic and rubber, etc. Therefore, looking into the trade effects of AD activities on specific industry groups makes sense.

The policy tools against dumping (AD) are inherently discriminatory in terms of both countries and industries. This is because AD duties are imposed on the imports of specific commodities from the Named countries whereas the imports of the same commodity from Non-named countries are excluded. Therefore, AD measures are considered to be a policy tool to protect the specific industry from the Named country's exporting industry, and not all its industries.

So it is imperative to assess the impact of AD policy on the imports of various groups of commodities. In the present sample of the cases, we find six broad groups identified at six digit HS code. They are Base-metals, Minerals, Textiles and Papers, Chemicals and Plastics including rubber, Vehicles, Machines, etc. These are broad categories and are grouped together to avoid complexities. The following table gives us the results of the regressions trade destruction effects on the import value, import quantity and unit price of the six commodity groups. There are two sets of regression results presented here, first is where all the commodity groups have been taken together (synthesis model) and the second is where only a particular group is taken and others are kept constant. So we can see the relative changes in that particular group with respect to others.

The five dummies have been incorporated in the model as it has been done earlier and to identify the group, group name is also added to the earlier dummies. First year dummy (d1_ini) measures the initiation effects or investigation effects on the respective group. The dummies from the second to fourth (d1_aduty for after duty imposition) measure the duty imposition effects on the respective groups.

Table 5.11: Industry Specific Trade Effects - HS Classification Based Industry (Synthesis Model)			
Variables	Value	Quantity	Unit Price
	Model 1	Model 2	Model 3
ln_wld_(val) (qty)(unit_val)#			
L.ln_wld_(val) (qty)(unit_val)#	0.240*** (3.177)	0.380*** (4.114)	0.283*** (2.993)
L2.ln_wld_(val) (qty)(unit_val)#	0.173*** (3.051)	0.0578 (1.204)	0.0484 (1.074)
d1_ini_basemetals	-0.247* (-1.901)	-0.00969 (-0.0475)	-0.291** (-2.185)
d1_aduty_basemetals	-0.183 (-1.493)	-0.307 (-1.447)	0.0108 (0.0829)
d2_aduty_basemetals	-0.237 (-1.532)	-0.314 (-1.293)	0.0279 (0.176)
d3_aduty_basemetals	0.104 (0.579)	0.122 (0.665)	-0.133 (-1.124)
d4_aduty_basemetals	-0.167 (-0.718)	0.0738 (0.422)	-0.421** (-2.528)
d1_ini_minerals	-0.265 (-1.262)	-0.141 (-0.941)	0.0191 (0.126)
d1_aduty_minerals	0.357** (2.113)	0.340** (1.977)	-0.186 (-1.612)
d2_aduty_minerals	0.751** (2.077)	0.238*** (2.620)	0.00363 (0.0268)
d3_aduty_minerals	0.705* (1.703)	-0.191 (-0.538)	0.269 (1.135)
d4_aduty_minerals	0.319 (0.773)	-0.593* (-1.654)	0.331 (1.437)
d1_ini_machines	-0.272*** (-2.869)	0.199 (0.677)	-0.502* (-1.883)
d1_aduty_machines	0.281* (1.866)	-0.209 (-1.045)	0.391** (2.388)
d2_aduty_machines	0.0694 (0.667)	-0.256 (-1.504)	0.264 (1.347)
d3_aduty_machines	-0.108 (-1.011)	-0.660*** (-3.049)	0.600*** (2.859)
d4_aduty_machines	-0.202* (-1.837)	-0.409*** (-3.317)	0.439** (2.255)

Table 5.12 : Trade Effects on HS Classification Based Industry-Base Metals			
Variables	Value	Quantity	Unit Price
	Model 1	Model 2	Model 3
d1_ini_vehicles	-0.629*** (-3.273)	-0.341* (-1.855)	0.173 (0.851)
d1_aduty_vehicles	0.209 (1.252)	0.486* (1.906)	-0.112 (-0.900)
d2_aduty_vehicles	0.303*** (2.640)	0.638*** (5.650)	-0.258*** (-2.645)
d3_aduty_vehicles	0.180 (1.624)	0.594*** (3.090)	-0.369* (-1.871)
d4_aduty_vehicles	0.218* (1.845)	0.356* (1.725)	-0.126 (-0.575)
d1_ini_chem_plast	-0.0127 (-0.243)	0.0492 (0.564)	0.0195 (0.211)
d1_aduty_chem_plast	0.0822 (1.321)	0.0163 (0.219)	0.119** (2.044)
d2_aduty_chem_plast	0.102* (1.854)	-0.0524 (-0.858)	0.158** (2.389)
d3_aduty_chem_plast	0.221*** (2.948)	0.159** (1.984)	0.0873 (1.118)
d4_aduty_chem_plast	0.118 (1.364)	-0.0265 (-0.358)	0.164* (1.703)
d1_ini_text_papers	-0.540** (-1.991)	-0.658** (-2.190)	0.0983 (0.999)
d1_aduty_text_papers	0.521** (2.409)	0.604* (1.803)	0.211*** (3.285)
d2_aduty_text_papers	1.018** (2.154)	0.691 (1.498)	0.393 (1.154)
d3_aduty_text_papers	0.00138 (0.00417)	0.865 (1.626)	0.203 (1.298)
d4_aduty_text_papers	0.187 (0.574)	1.031** (2.219)	0.164 (1.401)
Constant	9.502*** (7.900)	8.576*** (5.020)	0.698*** (3.070)
Year dummy (I.year)	YES	YES	YES
Observations	892	845	845
Number of id	141	136	136
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 # Model 1-Value, Model 2-Quantity, Model 3-Unit Value Note:- 1. Year dummies have been taken into model as a control variable for trend. 2. Statistics in the second parenthesis below the significant z statistics show the percentage change.			

Being the synthesis model, where all the groups have been incorporated in the model, the results are not comparable between/among the commodity groups. But, we can assess significance of the result and state whether the trade effects on the specific group are significant or not.

There are two types of effects, pre-duty effects and post-duty effects. Pre-duty effects are signaling and initiation effects while post-duty effects are duty imposition effects and actual duty effects.

Pre-Duty Effects

As far as the initiation effects are concerned, out of six groups of industries only two groups (base metals and machines) have initiation effects on the unit price. The unit prices of both the industries fall significantly during the initiation period by 25.24 and 39.46 percent and for others there is no significant change. Surprisingly, even after a fall in the unit prices, the import values of the base metals and machines fall significantly by 21.88 per cent and 23.81 per cent. Significant effects are observed on the vehicles group of products where the quantity and value fall heavily by 28.89 per cent and 46.68 per cent respectively. Products grouped under all the three groups are mostly capital goods. So for capital goods initiations effects are significant. There are no significant effects observed on chemical and plastics and minerals. But for the group of textiles and paper, import volume and import value both fall by 48.21 per cent and 41.72 per cent respectively.

Post-Duty Effects

There are no significant imposition effects on the base metal industry except the unit price falls in the fourth year after the imposition. But we note a significant fall in import value and unit prices both.

The imposition effects on the machinery industry are significant. The unit prices of products increases in first, third and fourth year by 48 per cent, 82.21 per cent and 55.11 per cent respectively. Thus, increase in the unit value is heavy and therefore, the import quantity drop significantly during third and fourth years by 48.31 per cent and 33.56 per cent respectively. Consequently, the import value dropped significantly in the third and fourth year.

The post-duty trade effects on the category of 'Minerals' are significant. Though the imposition effects in the unit price model are not significant, they are highly significant in the import quantity and import value models. During the first and second year import volume initially increases by 40.44 per cent and 27 per cent. But it

starts falling in third year and falls in the fourth year significantly (-44.73 per cent). The imposition effects on import value are highly significant. It increases heavily for first three years by 43 per cent, 112 per cent and 102 per cent respectively.

It is a strange that the unit prices drop even after the duty imposition for the Vehicles category. They fell significantly during second and third year after duty imposition by 22.47 per cent and 30.85 per cent in the respective years. Since there was a fall in the unit prices, import quantity increased heavily throughout the fourth year after duty imposition. They increased by 62.57 per cent, 89.26 per cent, 81.12 per cent and 42.76 per cent during first to fourth year respectively. Even then, may be due to heavy increased in import volume, the import value increases significantly during second and fourth year by 35.39 per cent and 24.55 per cent respectively. This clearly indicates that the import demand for vehicles is price elastic.

The fifth category is Chemicals and Plastics. They have been clubbed together due to insufficient information individually. Both of them are chemical-based and are demanded mostly as intermediate goods. The imposition effects in the unit value model are seen significant throughout four years after imposition except for the third year. It increased by 12.63 per cent, 17.11 per cent and 17.82 per cent during first, second and fourth year respectively. The import quantity did not change during the first two years after the imposition but it rose by 17.23 per cent in the third year. As far as import value is concerned, it did not alter in the first year but then went up by 10.73 per cent and 24.73 per cent respectively in the third and fourth years.

In case of 'Textiles and Papers' the unit price went up significantly by 24.73 per cent during first year after the imposition but for other years it was not significant. The import quantity increased during the first and fourth years significantly by 82.94 per cent and 100 per cent respectively. The import value increased significantly during first two year. It increased by 68.37 per cent and 176 per cent during the first and second years. This is how the huge trade effects was seen in case of textiles and papers which again were mostly imported as intermediate goods.

The results of the synthesis model are also supported by independent regressions of the individual groups. The results presented in Tables 5.13 to table 5.19 are the partial regression model results for all the six categories of the industries.

In Table 5.13, the unit prices of the base metal industry fell after the imposition of duty. As a consequence the import quantity increased slightly but the trade value had negative signs and it fell significantly in the first and second year after the imposition.

Table 5.13 : Industry Specific Trade Effects (Base Metals)			
Variables	Value	Quantity	Unit Price
	Model 1	Model 2	Model 3
ln_wld_(val) (qty) (unit_val) #			
L.ln_wld_(val) (qty) (unit_val) #	0.247*** (4.886)	0.368*** (6.869)	0.320*** (3.851)
L2.ln_wld_(val) (qty) (unit_val) #	0.148*** (3.173)	0.0520 (1.226)	0.0695* (1.688)
d1_ini	-0.111** (-1.996)	-0.0197 (-0.231)	-0.0118 (-0.122)
d1_aduty	0.189*** (4.185)	0.0561 (0.980)	0.183*** (3.512)
d2_aduty	0.224*** (3.775)	-0.00931 (-0.185)	0.223*** (3.360)
d3_aduty	0.147** (2.036)	0.0595 (0.790)	0.246*** (2.980)
d4_aduty	0.0936 (1.224)	-0.0200 (-0.330)	0.297*** (3.139)
d1_ini_basemetals	-0.105 (-0.791)	0.00698 (0.0311)	-0.234 (-1.572)
d1_aduty_basemetals	-0.362*** (-3.079)	-0.334 (-1.575)	-0.149 (-1.070)
d2_aduty_basemetals	-0.423*** (-2.721)	-0.271 (-1.113)	-0.150 (-0.913)
d3_aduty_basemetals	0.00211 (0.0124)	0.0929 (0.486)	-0.300** (-2.192)
d4_aduty_basemetals	-0.233 (-1.094)	0.145 (0.903)	-0.596*** (-3.467)
Constant	9.802*** (14.36)	8.362*** (8.149)	0.701*** (3.108)
Year Dummy (i.year)	YES	YES	YES
Observations	892	845	845
Number of id	141	136	136
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 # Model 1-Value, Model 2-Quantity, Model 3-Unit Value Note:- 1. Year dummies have been taken into model as a control variable for trend. 2. Statistics in the second parenthesis below the significant z statistics show the percentage change.			

Results for the vehicles industry are little different from the base metals industry. The unit prices in the model 3 of Table 5.14, fell significantly after the duty imposition. And may be, as a result the import quantity they rose significantly but the import value did not change much.

Table 5.14 : Industry Specific Trade Effects (Vehicles)			
Variables	Value	Quantity	Unit Price
	Model 1	Model 2	Model 3
ln_wld_(val) (qty) (unit_val) #			
L.ln_wld_(val) (qty) (unit_val) #	0.251*** (5.206)	0.368*** (6.770)	0.327*** (4.014)
L2.ln_wld_(val) (qty) (unit_val) #	0.150*** (3.118)	0.0474 (1.122)	0.0794* (1.867)
d1_ini	-0.124** (-2.384)	-0.00515 (-0.0659)	-0.0584 (-0.667)
d1_aduty	0.135*** (2.995)	0.00195 (0.0350)	0.170*** (3.470)
d2_aduty	0.156*** (2.665)	-0.0669 (-1.248)	0.215*** (3.380)
d3_aduty	0.139* (1.895)	0.0586 (0.828)	0.217*** (2.952)
d4_aduty	0.0567 (0.704)	-0.0259 (-0.418)	0.249*** (2.783)
d1_ini_vehicles	-0.611** (-2.277)	-0.491*** (-2.594)	0.338 (1.384)
d1_aduty_vehicles	0.104 (0.573)	0.445* (1.837)	-0.346** (-2.426)
d2_aduty_vehicles	0.172 (1.420)	0.788*** (5.589)	-0.522*** (-4.710)
d3_aduty_vehicles	0.0999 (0.754)	0.734*** (2.894)	-0.613*** (-3.340)
d4_aduty_vehicles	0.203 (1.245)	0.614*** (2.700)	-0.334 (-1.236)
Constant	9.692*** (13.76)	8.887*** (8.971)	0.635*** (2.907)
Year Dummy (i.year)	YES	YES	YES
Observations	892	845	845
Number of id	141	136	136
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 # Model 1-Value, Model 2-Quantity, Model 3-Unit Value Note:-1.Year dummies have been taken into model as a control variable for trend. 2. Statistics in the second parenthesis below the significant z statistics shows the percentage change.			

Results of the trade effects on the machinery industry are consistent with the results of the synthesis model. Just after the initiation and before the duty imposition the unit price fell considerably. In both the previous industries cases the unit prices fell and the import quantity increased. But in this case the unit prices increased significantly after the imposition of the duty and the import quantity falls significantly. As a result, the import value dropped throughout the four years.

Table 5.15 : Industry Specific Trade Effects (Machines)			
Variables	Value	Quantity	Unit Price
	Model 1	Model 2	Model 3
ln_wld_(val) (qty) (unit_val) #			
L.ln_wld_(val) (qty) (unit_val) #	0.247*** (4.566)	0.383*** (6.253)	0.302*** (3.192)
L2.ln_wld_(val) (qty) (unit_val) #	0.167*** (3.012)	0.0397 (0.910)	0.0594 (1.304)
d1_ini	-0.126** (-2.563)	-0.0332 (-0.429)	-0.0249 (-0.318)
d1_aduty	0.103** (2.207)	0.0424 (0.730)	0.0922* (1.908)
d2_aduty	0.164*** (2.800)	-0.0151 (-0.275)	0.138** (2.158)
d3_aduty	0.167** (2.289)	0.216*** (2.981)	0.0477 (0.669)
d4_aduty	0.0745 (0.951)	0.0726 (1.171)	0.0938 (1.087)
d1_ini_machines	-0.186** (-2.259)	0.187 (0.679)	-0.505** (-2.308)
d1_aduty_machines	0.196 (1.290)	-0.236 (-1.112)	0.289 (1.546)
d2_aduty_machines	-0.0782 (-0.740)	-0.235 (-1.274)	0.116 (0.534)
d3_aduty_machines	-0.241** (-2.371)	-0.888*** (-3.769)	0.535** (2.291)
d4_aduty_machines	-0.199* (-1.907)	-0.512*** (-3.777)	0.333 (1.488)
Constant	9.452*** (12.68)	8.769*** (8.002)	0.611*** (2.829)
Year Dummy (i.year)	YES	YES	YES
Observations	892	845	845
Number of id	141	136	136
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 # Model 1-Value, Model 2-Quantity, Model 3-Unit Value Note:-1. Year dummies have been taken into model as a control variable for trend. 2. Statistics in the second parenthesis below the significant z statistics show the percentage change.			

Effects on the minerals industry are different from the earlier cases. There were no adverse signaling effects on the unit prices. Rather unit price fell after the imposition of duty in the first and second years. Importers of minerals might have succeeded in getting the downward revision in the import prices. Consequently, trade fell in the investigation period and increased after the duty imposition.

Table 5.16 : Industry Specific Trade Effects (Minerals)			
Variables	Value	Quantity	Unit Price
	Model 1	Model 2	Model 3
ln_wld_(val) (qty) (unit_val) #			
L.ln_wld_(val) (qty) (unit_val) #	0.241*** (4.695)	0.360*** (6.715)	0.325*** (3.977)
L2.ln_wld_(val) (qty) (unit_val) #	0.143*** (3.098)	0.0426 (0.987)	0.0780* (1.829)
d1_ini	-0.124** (-2.390)	-0.0118 (-0.147)	-0.0625 (-0.697)
d1_aduty	0.131*** (2.915)	-0.00297 (-0.0531)	0.175*** (3.379)
d2_aduty	0.155*** (2.730)	-0.0533 (-1.034)	0.209*** (3.108)
d3_aduty	0.145** (2.042)	0.0788 (1.158)	0.207*** (2.756)
d4_aduty	0.0709 (0.924)	-0.000519 (-0.00931)	0.244*** (2.733)
d1_ini_minerals	-0.137 (-0.685)	-0.0759 (-0.426)	0.132 (0.904)
d1_aduty_minerals	0.235 (1.344)	0.314* (1.820)	-0.355** (-2.358)
d2_aduty_minerals	0.529 (1.620)	0.117 (1.007)	-0.123 (-0.700)
d3_aduty_minerals	0.402 (1.309)	-0.471 (-0.783)	0.127 (0.425)
d4_aduty_minerals	0.138 (0.436)	-0.829 (-1.384)	0.183 (0.635)
Constant	9.963*** (13.51)	9.061*** (9.020)	0.635*** (2.901)
Year Dummy (i.year)	YES	YES	YES
Observations	892	845	845
Number of id	141	136	136
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 # Model 1-Value, Model 2-Quantity, Model 3-Unit Value Note:-1. Year dummies have been taken into model as a control variable for trend. 2. Statistics in the second parenthesis below the significant z statistics show the percentage change.			

As far as effects on the textiles and paper industries are concerned, the unit prices increased during the initiation period and thereby both the import quantity and import value dropped significantly. But after the duty imposition import quantity and import value increased noticeably.

Table 5.17 : Industry Specific Trade Effects (Textiles and Papers)			
Variables	Value	Quantity	Unit Price
	Model 1	Model 2	Model 3
ln_wld_(val) (qty) (unit_val) #			
L.ln_wld_(val) (qty) (unit_val) #	0.263*** (3.874)	0.382*** (4.185)	0.322*** (3.974)
L2.ln_wld_(val) (qty) (unit_val) #	0.169*** (3.212)	0.0537 (1.218)	0.0790* (1.883)
d1_ini	-0.0877* (-1.913)	0.0442 (0.607)	-0.0729 (-0.804)
d1_aduty	0.107** (2.029)	-0.0368 (-0.560)	0.152*** (2.898)
d2_aduty	0.0853* (1.716)	-0.102* (-1.726)	0.188*** (2.994)
d3_aduty	0.181*** (2.818)	0.0299 (0.443)	0.197*** (2.688)
d4_aduty	0.0794 (1.072)	-0.0720 (-1.243)	0.239** (2.574)
d1_ini_text_papers	-0.438 (-1.597)	-0.685** (-2.346)	0.207** (2.213)
d1_aduty_text_papers	0.464* (1.917)	0.663* (1.791)	0.0876 (1.132)
d2_aduty_text_papers	0.984** (1.992)	0.838* (1.682)	0.225 (0.678)
d3_aduty_text_papers	-0.130 (-0.386)	0.901 (1.612)	0.0529 (0.342)
d4_aduty_text_papers	0.175 (0.506)	1.136** (2.300)	-0.00235 (-0.0204)
Constant	9.222*** (7.881)	8.602*** (5.330)	0.635*** (2.897)
Year Dummy (i.year)	YES	YES	YES
Observations	892	845	845
Number of id	141	136	136
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 # Model 1-Value, Model 2-Quantity, Model 3-Unit Value Note:-1. Year dummies have been taken into model as a control variable for trend. 2. Statistics in the second parenthesis below the significant z statistics show the percentage change.			

As seen in the synthesis model, the trade effects on the chemical industry are peculiar. During the period of investigation unit value, import quantity and import value increased significantly. But after the duty imposition unit value fell and the import quantity went up noticeably.

Table 5.18 : Industry Specific Trade Effects (Chemicals and Plastics)

Variables	Value	Quantity	Unit Price
	Model 1	Model 2	Model 3
ln_wld_(val) (qty) (unit_val) #			
L.ln_wld_(val) (qty) (unit_val) #	0.237*** (5.173)	0.354*** (6.854)	0.306*** (3.612)
L2.ln_wld_(val) (qty) (unit_val) #	0.138*** (2.740)	0.0403 (0.961)	0.0564 (1.224)
d1_ini	-0.337*** (-3.413)	-0.103 (-0.731)	0.682*** (-1.930)
d1_aduty	0.171** (2.385)	-0.0343 (-0.356)	0.164** (2.083)
d2_aduty	0.197* (1.812)	-0.0900 (-0.823)	0.193* (1.779)
d3_aduty	-0.0210 (-0.219)	-0.109 (-0.856)	0.277** (2.453)
d4_aduty	-0.115 (-1.240)	-0.0858 (-0.860)	0.233* (1.915)
d1_ini_chem_plast	0.339*** (3.069)	0.145 (0.974)	0.279*** (2.659)
d1_aduty_chem_plast	-0.0869 (-0.835)	0.0610 (0.448)	-0.0309 (-0.303)
d2_aduty_chem_plast	-0.100 (-0.812)	0.0434 (0.327)	-0.0182 (-0.152)
d3_aduty_chem_plast	0.255** (2.528)	0.280* (1.820)	-0.152 (-1.188)
d4_aduty_chem_plast	0.249*** (2.621)	0.0839 (0.694)	-0.0237 (-0.188)
Constant	10.13*** (16.21)	9.189*** (9.235)	
Year Dummy (i.year)	YES	YES	YES
Observations	892	845	845
Number of id	141	136	136

Robust z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Model 1-Value, Model 2-Quantity, Model 3-Unit Value

Note:-1. Year dummies have been taken into model as a control variable for trend.

2. Statistics in the second parenthesis below the significant z statistics show the percentage change.

5.9 Region Specific Effects - Emerging vs Developed (OECD)

Though the data used is aggregate of the both named and unnamed countries and therefore seems inadequate for this kind of analysis. But it has specific relevance in making some relative statements about the trade effects on the overall trade when targeted to specific group of countries. Here we are trying to estimate the relative sensitivity of the overall import demand of the particular dumped commodity group when the AD is targeted at some a particular group of countries such as emerging/developing and developed countries. For example, if India targets a group of emerging countries then how the overall import gets affected where both the emerging and developed countries and Named- Unnamed countries import are aggregated.

This gives us the overall trade effects of anti-dumping policy when the target country is either developed or emerging. It also gives us the rough estimates of the relative importance of the country group in the total import of particular commodities and hence the sensitivity of import of that commodity from that particular group.

For this analysis, countries have been classed into Emerging and Developed groups. There are total eight countries in the sample four in emerging group (China, Thailand, Malaysia and Indonesia) and four in developed group (U.S. , E.U., South Korea and Japan). For simplicity, cases with multiple countries involved have been dropped.

It is seen from Tables 5.14 and 5.15 that when the target country involved in the petition was emerging, the trade value drops significantly in the third and fourth year after the duty imposition by 26.21 per cent and 31.61 per cent (Table 5.14). Similarly, import quantity also dropped significantly in the same year by 26.58 per cent and 27.81 per cent (Table 5.14).

Table 5.19 : Region Specific Trade Effects (Emerging Countries)			
Variables	Value	Quantity	Unit Price
	Model 1	Model 2	Model 3
ln_wld_(val) (qty)(unit_val)#			
L.ln_wld_(val) (qty)(unit_val)#	0.246*** (5.129)	0.360*** (6.505)	0.327*** (3.945)
L2.ln_wld_(val) (qty)(unit_val)#	0.145*** (3.070)	0.0391 (0.917)	0.0778* (1.815)
d1_ini	-0.0866 (-1.250)	0.0913 (1.324)	-0.0580 (-0.627)
d1_aduty	0.198*** (3.383) (21.89)	0.0764 (0.984)	0.169*** (2.951) (18.41)
d2_aduty	0.157*** (2.849) (16.99)	-0.0580 (-1.154)	0.202*** (3.240) (22.38)
d3_aduty	0.320*** (3.818) (37.71)	0.245*** (2.840) (27.76)	0.191** (2.251) (21.04)
d4_aduty	0.295*** (3.682) (34.31)	0.172** (2.337) (18.76)	0.233** (2.055) (26.23)
emrg_d1_ini	-0.0753 (-0.759)	-0.174 (-1.537)	0.00666 (0.0695)
emrg_d1_aduty	-0.103 (-1.587)	-0.116 (-1.213)	-0.0137 (-0.193)
emrg_d3_aduty	-0.304*** (-2.582) (-26.21)	-0.309** (-2.547) (-26.58)	0.0221 (0.182)
emrg_d4_aduty	-0.380*** (-3.796) (-31.61)	-0.326*** (-3.416) (-27.81)	0.0141 (0.119)
Constant	9.780*** (14.38)	8.688*** (8.451)	1.115*** (4.672)
Year dummy (i. year)	YES	YES	YES
Observations	892	845	845
Number of id	141	136	136
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 # Model 1-Value, Model 2-Quantity, Model 3-Unit Value Note:-1. Year dummies have been taken into model as a control variable for trend. 2. Statistics in the second parenthesis below the significant z statistics show the percentage change.			

As oppose to the emerging countries, when the target countries were developed (OECD) countries the trade value increased significantly during the first, third and fourth years after the duty imposition by 15 per cent, 28.27 per cent and 24.35 per cent respectively (Table 5.15). In the same way, import quantity also increased in the

third and fourth year by 33.24 per cent and 23.62 per cent respectively (Table 5.15). This indicates that imports from the emerging countries are more sensitive to the Indian AD policy than the imports from the developed countries.

Table 5.20 : Region Specific Trade Effects (Synthesis Model)			
Variables	Value	Quantity	Unit Price
	Model 1	Model 2	Model 3
ln_wld_(val) (qty)(unit_val)#			
L.ln_wld_(val) (qty)(unit_val)#	0.253*** (5.419)	0.351*** (6.251)	0.341*** (4.207)
L2.ln_wld_(val) (qty)(unit_val)#	0.140*** (2.816)	0.0335 (0.762)	0.0720 (1.584)
emrg_d1_ini	-0.139* (-1.930)	-0.0795 (-0.745)	-0.0541 (-0.527)
emrg_d1_aduty	0.0368 (0.801)	-0.0197 (-0.338)	0.0812 (1.530)
emrg_d3_aduty	-0.0613 (-0.720)	-0.0149 (-0.166)	0.0570 (0.574)
emrg_d4_aduty	-0.177** (-2.048)	-0.112* (-1.669)	0.0767 (0.802)
dev_d1_ini	-0.0459 (-0.620)	0.0831 (1.271)	-0.0305 (-0.334)
dev_d1_aduty	0.140** (2.560)	0.0994 (1.414)	0.0814* (1.852)
dev_d3_aduty	0.249*** (3.252)	0.287*** (3.592)	0.0342 (0.575)
dev_d4_aduty	0.218*** (3.120)	0.212*** (3.061)	0.0681 (0.866)
Constant	9.772*** (14.46)	8.892*** (8.377)	0.595*** (2.852)
Year dummy (i. year)	YES	YES	YES
Observations	892	845	845
Number of id	141	136	136
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 # Model 1-Value, Model 2-Quantity, Model 3-Unit Value Note:-Year dummies have been taken into model as a control variable for trend.			

This also signifies that it could be due to the high share of named developing countries in India's import of those particular commodities. Conversely, in other case there could be a high share of unnamed developed countries in India's import of the commodities exported by the developed countries.

Thus, we can generalize that the commodities exported by the developing and developed countries are different in nature because their different sensitivity to antidumping duty.

5.10 Summery

This chapter analyses signaling effects, initiation effects and imposition effects and duty effects broadly termed as trade destruction effects of Indian AD policy. They are arranged in four parts. The first part deals with overall trade effects. Trade destruction effects on India's total imports of the named commodities have been analyzed. So it is total imports of the named commodities in the given period i.e. named and non-named together and not just named countries alone. Trade destruction effects are further classified into industry specific effects both use-based and HS- base classification and then region specific i.e. emerging and developed countries.

Our results are partly consistent with earlier those of the empirical studies. Rather they are different from what Prusa, Ganguli, Aggarwal and many others have found. They have found that the AD initiations reduce import value significantly during all the stages, i.e., pre-initiations, during investigations and after final duty imposition. But our result is that there are significant signaling and initiation effects in the first year of initiation. But after the second year of initiation i.e. after the duty imposition, trade value increased significantly because there is no significant change in the quantity imported while the unit price has shown significant increase. Theoretically, the trade value falls because the unit prices tend to go up after the imposition of duty and thereby reduces the quantity imported. But it depends on the elasticity of imports.

The results of the duty effect model are consistent with the results of erstwhile model that measured the only duty imposition effect, but this model allows us to measure the actual duty effect. To capture the specific effects we have used interaction dummies. We have interacted dummies earlier after initiation dummies by the actual dumping duty.

At the same time, we have kept earlier after initiation dummies to control the initiation effect. Thus, this model precisely captures actual duty effects. The unit price shows a significant rise during all the four years after the imposition of duties. Due to the rise in unit prices the quantity of imports decreased in the first two years (negative signs) but surprisingly increased in the third and fourth year. That simply means that even after the imposition of duty the quantity imported did not change significantly.

But an increase in unit price led to increased import value. Therefore, it appears to be inconsistent with earlier studies due to the inelastic demand for imports.

As far as the duty effects on total import value are concerned, it is function of unit prices and the import quantity. Therefore, it also decreased along with quantity in the first year of duty imposition. But it shows significant increasing trends in subsequent years.

The analysis of industry-specific trade effects gives us more clarity and corroborates our earlier results. An attempt has been made to analyze the trade effects of AD on the industries classified on the basis of their use, i.e., consumer goods, basic goods, capital goods and intermediate goods⁵. This allows us to assess the impact of AD according to the used-based groups of the commodities which differ in import elasticity and nature. Therefore, there is a possibility that each group may have different effects of the AD measures. Further we have extended this analysis to the industries classified by HS codes as attempted in Moonsung kang et al. (2012). This allows us to compare effects on both use-based classified and HS-code based classified industries.

As far as the initiation effect is concerned, it is evident from the results that the prices of basic goods and capital goods fall significantly during the investigation period. The unit value of basic goods fell by 34.44 per cent during the investigation period, whereas the in case of capital goods it decreased by 53.57 per cent. But there is no significant change in the unit prices of intermediate goods (which are mostly chemical goods and minerals). There is no significant effect observed in the import quantity of basic goods during investigations but its import value dropped by 29 per cent. Similarly, there is no investigation effect seen in the quantity of capital goods. But the gross import value dropped heavily (37 per cent). There is little investigation effect on the import quantity and import value of intermediate goods during the investigation period.

Though, the unit prices of basic goods dropped significantly during investigation period, there is no further significant change in the unit prices during the first three years after the duty imposition but in the fourth year prices decreased by 46.37 per

⁵ The classification is taken from the Ministry of Statistics and Programme Implementation.

cent. The import value of basic goods decreased in the first year after imposition of duty. Except this year there was no significant imposition effect.

In the case of capital goods, there was trade depressing effects during investigation period. The unit prices went up after the imposition of duty (39 per cent to 62 per cent). Though there was no significant drop in the import quantity during the first and second year after the imposition of duty; signs of the coefficients are still negative. But import quantity dropped very significantly during the third and fourth year after the duty imposition. Nevertheless, import value remained unchanged, though the coefficients are negative.

As far as intermediate goods are concerned, the unit prices increased significantly after the imposition. But surprisingly, there was no drop in quantity. Consequently, the import value increased during the first three years after the duty imposition.

Thus, we can conclude that there are no trade depressing effects of antidumping duty imposition. But there are investigation (harassment) effect and trade drops significantly during the initiation and investigation period for basic goods.

Due to the inelastic demand for imports of capital goods, the import quantity did not fall during the first two years of imposition. But then in the third and fourth year it went down heavily. Thus, both initiation and duty imposition have trade destruction effects on the imports of capital goods. But there are more cases of intermediate goods in the sample than the basic and capital goods together and, therefore, it has influenced results of overall trade. Though the AD policy has been effective in raising the unit prices, it has failed to provide contingent protection to the domestic suppliers of the intermediate goods.

We tried to run the separate regressions for each of the commodity groups, keeping other commodities constant. It enables us to compare among the three commodities groups and helps us to understand the relative effects on each category. Though this was possible with regression of any one group of commodity but for better understanding and clarity it has been done separately for all the groups.

There are two types of effects, pre-duty effects while post-duty effects. Pre-duty effects are signaling and initiation effects and post duty are duty imposition effects and actual duty effects.

Pre-Duty Effects

As far as the initiation effects are concerned, out of six groups of industries only two groups (base metals and machines) had initiation effects on the unit price. The unit prices of the both the industries fell significantly during the initiation period by 25.24 per cent and 39.46 per cent and for others there was no significant change. Surprisingly, even after the fall in the unit prices the import value of the base metals and machines fell significantly by 21.88 per cent and 23.81 per cent. Significant effects are observed on the vehicles group of products where the quantity and value fell heavily by 28.89 per cent and 46.68 per cent respectively. Products grouped under all the three groups were mostly capital goods. So for capital goods, initiations effects are significant. There are no significant effects observed on chemical and plastics and minerals. But for the group of textiles and papers both import volume and import value fell by 48.21 per cent and 41.72 per cent respectively.

Post-Duty Effects

There are no significant imposition effects seen on the base metal industry except the unit price falls in the fourth year after the imposition. We noted a significant fall in both import value and unit prices.

The imposition effects on the machinery industry are significant. The unit prices of this group of products increased in the first, third and fourth year by 48 per cent, 82.21 per cent and 55.11 per cent respectively. Thus, increase in the unit value was heavy and therefore, the import quantity dropped significantly during the third and fourth year by 48.31 per cent and 33.56 per cent respectively. Consequently, the import value also dropped significantly in the third and fourth year.

The post-duty trade effects on the category 'Minerals' are significant. Though the imposition effects in the unit price model are not significant, they are highly significant in the import quantity and import value models. The import volume during the first and second year increased by 40.44 per cent and 27 per cent. But it started falling in the third year and fell in the fourth year significantly (-44.73 per cent). The imposition effects on import value are highly significant. It increased heavily for the first three years by 43 per cent, 112 per cent and 102 per cent respectively.

It is strange that the unit prices dropped even after the duty imposition for the Vehicles category. The unit prices for the vehicles fell significantly during the second and third year after duty imposition by 22.47 per cent and 30.85 per cent in the

respective years. Since there was a fall in the unit prices, import quantity increased throughout the four years after duty imposition. It increased by 62.57 per cent, 89.26 per cent, 81.12 per cent and 42.76 per cent during the first to fourth year respectively. Even after a fall in unit prices, may be, due to heavy increased in import volume, the import value increased during the second and fourth years by 35.39 per cent and 24.55 per cent respectively. This indicates that the import demand for the vehicles is price elastic.

The fifth category is Chemicals and Plastics. They were clubbed together due to insufficient observations individually. Beside they are chemical-based and are demanded mostly as intermediate goods. The imposition effects in the unit value model are seen significant throughout the four years after imposition except for the third year. It increased by 12.63 per cent, 17.11 per cent and 17.82 per cent during the first, second and fourth year respectively. The import quantity did not change during the first two years after the imposition but it rose by 17.23 per cent in the third year. As far as import value is concerned, it did not alter in first year but then went up by 10.73 per cent and 24.73 per cent respectively in the third and fourth years.

In case of textiles and papers group the unit price rose up significantly by 24.73 per cent during the first year after the imposition but for other years it was not significant. The import quantity of this industry group increased significantly by 82.94 per cent and 100 per cent respectively during the first and fourth years. The import value increased significantly during the first two years. It increased by 68.37 per cent and 176 per cent during the first and second year. This is how the very huge trade effects are seen in the case of textiles and papers which again are mostly imported as intermediate goods. Results of the synthesis model also supported by the independent regressions of the individual groups.

Chapter-VI

Trade Effects of Antidumping on Named and Unnamed Countries

6.1 Introduction

The present chapter is an extension of the previous chapter which deals with trade effects at the disaggregated level. The overall trade effects have been disaggregated into Named¹ and Unnamed countries trade effects. For this analysis, we have compiled data for the imports of the Named commodities from the named countries. To get unnamed countries, we have subtracted the named countries imports from total import (import from the whole world) of that commodity by India. So we have data for import of the countries named in the petition and from countries exporting the similar goods to India but not named in the petition. This will help us to assess the trade effects of AD policy on both Named and Unnamed countries separately and thereby check the possibility of trade diversion.

Theoretically if imports from named countries fall after the initiation or duty imposition and the trade from the unnamed countries in the same commodities increases, then there are chances of trade diversion. But merely fall in the trade from named countries proves trade destruction and not trade diversion. It can be proved only when there is sudden increase in the imports of the named commodities. But in this case, the results of the previous chapter are very indicative. As far as quantity imported from the named countries is concerned, there is no evidence of significant change in quantity imported and hence there is little possibility of trade diversion. So prima facie we can rule out the possibility of trade diversion. But this can be supported by the analysis of trade effects on imports from named and unnamed countries separately.

There has been substantial research on this type of issues mostly in U.S. and E.U. , for example by Prusa (1996, 2001, 2016), Park (2009) and Shen (2008) in U.S. Irwin (2005) found that the US imports from non-named countries increase after the duty imposition on named countries. As far as Indian experience of antidumping policy in concerned, only two studies are available on the trade diversion effects of Indian AD policy, namely Aggarwal (2003) and Ganguli (2008). These studies have reported

¹ Named countries are those countries which have been named in the petition and non- named or unnamed are the countries that still export the same product but are not named in the petition.

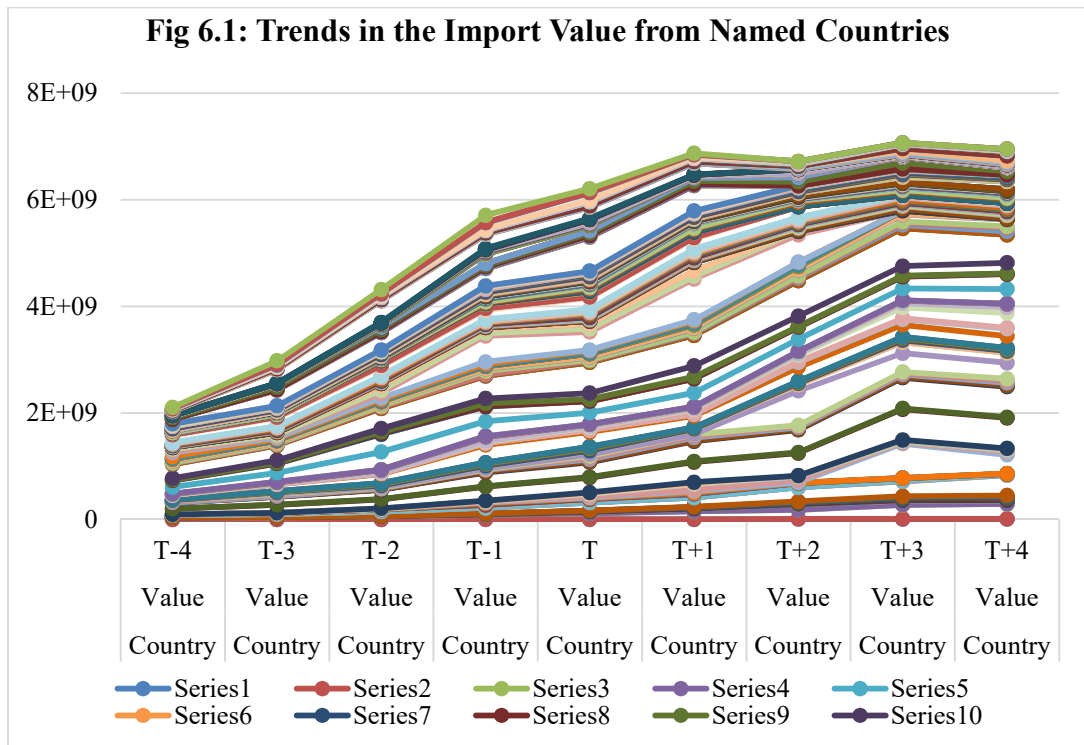
some degree of trade diversion effects. In both the cases imports from the named countries fall after the duty imposition and at the same time imports of similar goods increase from the unnamed countries. But both the studies have used trade data up to 2005 and hence there is a need to revisit the phenomenon.

Thus, the basic objective of this chapter is to assess the trade effects of antidumping policy on the imports from named and unnamed countries, and check the possibility and extent of trade diversion. Further, this analysis will be extended to the industry specific and country specific effects both diagrammatically and econometrically for both named and unnamed countries. The analysis of industry specific effects is carried out on the basis of HS and use based classifications of commodities.

6.2 Descriptive Trend Analysis

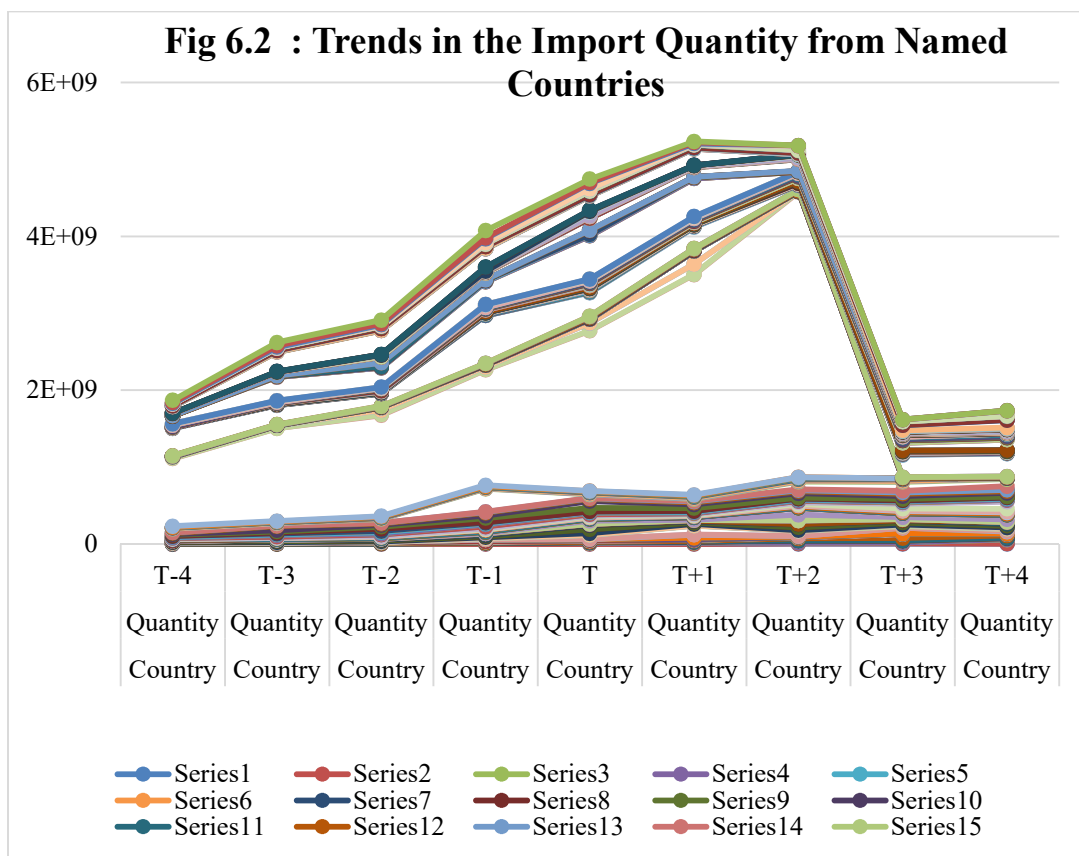
Following charts are the trend lines of the imports of dumped commodities from named countries and unnamed countries for nine years, four years before and after the initiation of AD investigation. So it should be clarified that the year of the initiation for every commodity is different but data has been compiled in such a way that the initiation year stands as a base year and we get four years window before and after the initiation. This gives us a rough idea about the trade effects on the imports of dumped goods from both the named and unnamed countries. The econometric analysis gives us exact estimation of the trade effects. But we get an instrument to verify our regression results with the actual trend lines. They have been drawn for the import value and import quantity of both the named and unnamed countries separately.

It is clear from Fig. 6.1 that the rate of growth of import value of named countries slows down after the initiation and especially after the duty imposition. Since there is a lag in reaction, trends can be observed with a minimum one year lag. The trade value drops more sharply after the $t+3$ i.e. considering the lag, after imposition effect.



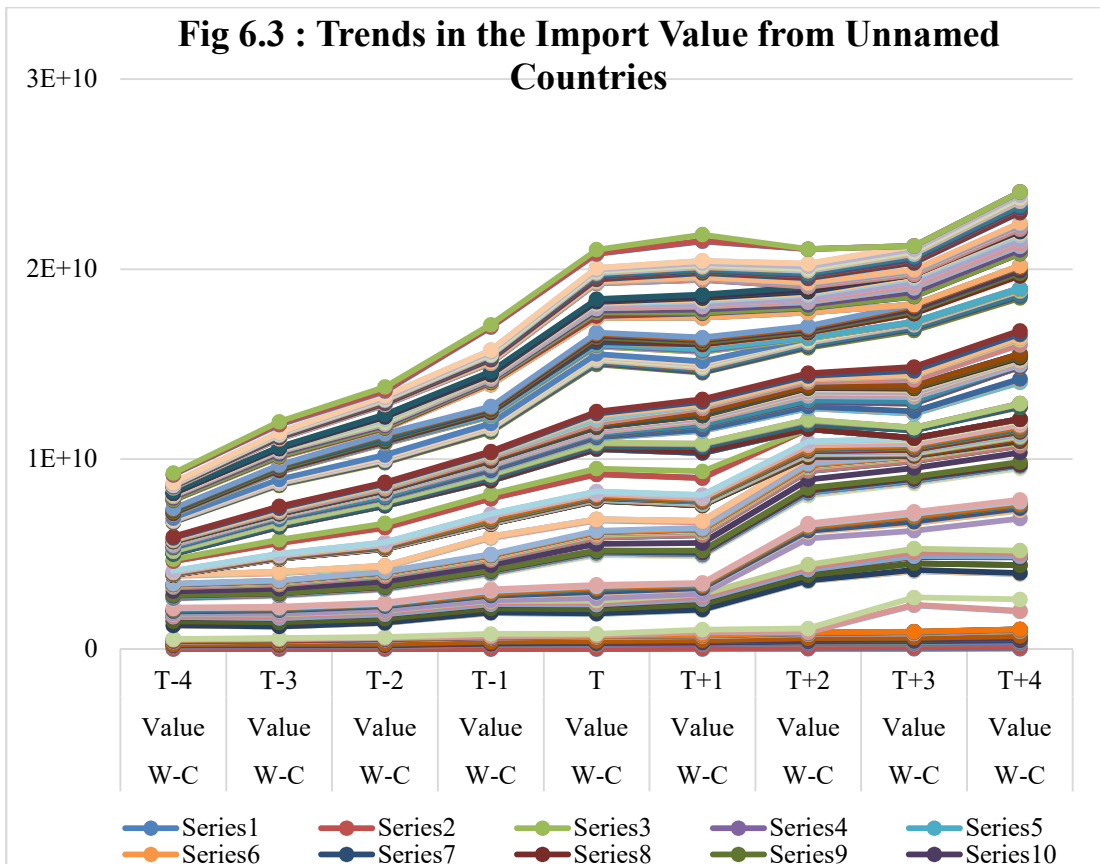
Source: Compiled and calculated by the author.

As far as the import quantity from the named countries is concerned, it does not seem to have initiation effect but has a very strong duty imposition effect with a year's lag. An observation can be made from the Fig 6.2, that there are clearly two groups of commodities and their responses to initiation and imposition are different. Import quantity of a group of commodities with high volume drops significantly after the imposition and does not seem to have initiation effect. But import quantities of group of commodities with low volume seem to have significant initiation effect but are relatively more affected by duty imposition.



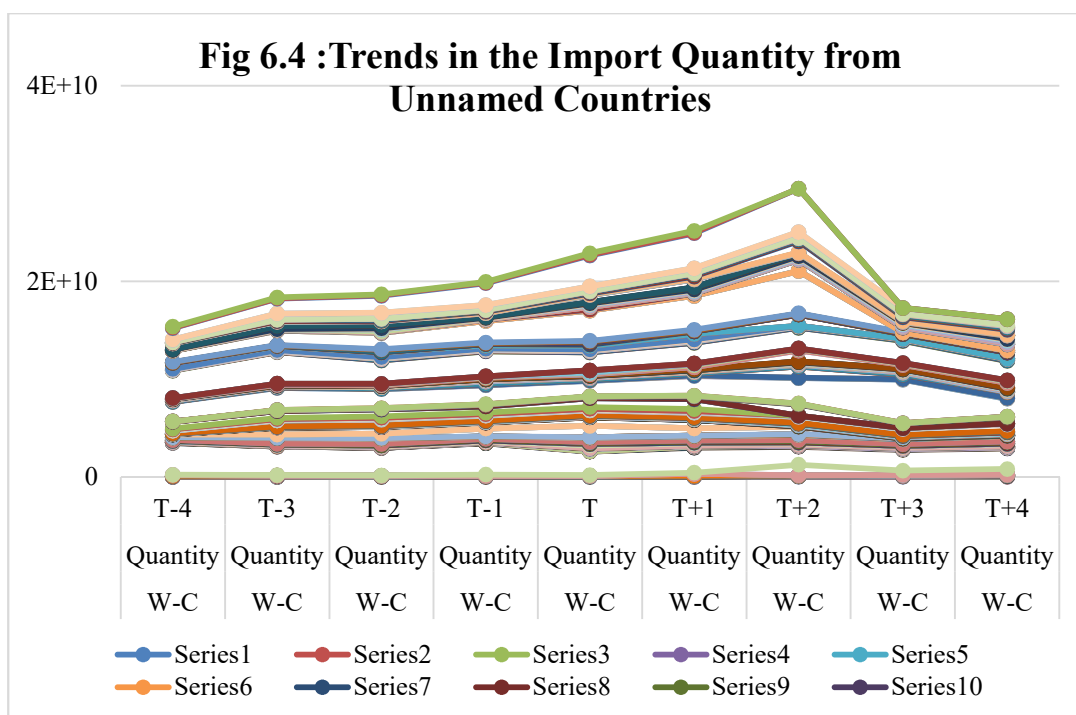
Source: Compiled and calculated by the author.

Response of the unnamed countries to the Indian AD actions surprisingly, unnamed countries seem to have more trade destruction effects than named countries, as it is pretty obvious from Fig 6.3 and Fig 6.4 below. Both the import value and import volume of unnamed countries are affected by the Indian AD actions on the named countries. The growth rate of import value of the unnamed countries slows down immediately after the initiation and imposition. But the trade value starts increasing slowly after the t+3 that are probably because of the upward price revision.



Source: Compiled and calculated by the author.

It is difficult to judge the possibility of trade diversion merely on the basis of the trade value because it is the product of unit price and quantity besides, it is difficult to know the effect of unit price and quantity separately. Therefore, a mere increase in the trade values does not indicate the possibility of trade diversion from named to unnamed countries. But changes in the import quantity can help us to check the possibility of trade diversion effect. As we know the trade effects on the unnamed countries are neither due to AD initiation nor to duty imposition on commodities from unnamed countries. Still the import quantity from the unnamed countries declines relative sharper than the quantity of the named-countries. Though there is no trace of initiation effects on the quantity, the post imposition effects are destructive. Now we can rule out the possibility of trade diversion since there is no increase in the quantity imported from the unnamed countries.



Source: Compiled and calculated by the author.

6.3 Trade Effects on Named Countries

a. Overall Trade Effects

The results presented in Table 6.1 below are the regression results of the named countries where India's import value (natural log) of dumped goods from the named countries² as a dependent variable are taken. The econometric specifications of the model are given in the previous chapter in general form. There is a small change in the model used here. The share of named countries in India's total import of the dumped commodities has been incorporated as a control variable in the model. Other components of the model are the same as used earlier. The dummies such as *d1_aduty*, *d2_aduty*, *d3_aduty* and *d4_aduty* are duty imposition dummies for four years after the imposition of the antidumping duties. Yearly dummies are also used as a control variable.

² Named countries are those countries those were named in the Antidumping petition by the Indian investigating authority (Director General of Antidumping Duty)

Table 6.1: Trade Effects on the Import Value, Quantity and Unit Price of Named Countries			
Variables	Value	Quantity	Unit value
	Model 1	Model 2	Model 3
ln_named_(val) (qty)(unit_val)#			
L. ln_named_(val) (qty)(unit_val)#	0.226** (2.218)	0.318*** (2.589)	-0.0307 (-0.341)
L2. ln_named_(val) (qty)(unit_val)#	0.0346 (0.582)	0.00918 (0.138)	-0.0175 (-0.332)
sh_named_val	3.229*** (3.210)	2.662*** (2.831)	- -
d1_aduty	0.333* (1.898)	0.266 (1.499)	0.0734 (1.320)
d2_aduty	0.242 (1.241)	0.0228 (0.112)	0.106 (1.470)
d3_aduty	0.567** (2.369)	0.206 (0.585)	0.0897 (1.010)
d4_aduty	0.645** (2.558)	0.206 (0.691)	0.163 (1.554)
adduty_d1a_imp	-0.0144 (-0.972)	-0.0155 (-0.876)	0.00657 (1.370)
adduty_d2a_imp	0.00708 (0.599)	-0.00585 (-0.465)	0.0131** (2.285)
adduty_d3a_imp	-0.0107 (-0.664)	0.00843 (0.209)	0.0172** (2.324)
adduty_d4a_imp	0.0420** (2.080)	0.0479* (1.807)	0.0175* (1.746)
Constant	9.930*** (5.089)	7.713*** (4.660)	2.803*** (5.618)
Year dummy (I.year)	YES	YES	YES
Observations	804	787	793
Number of id	138	133	135
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 # Model 1-Value, Model 2-Quantity, Model 3-Unit Value (Note:-1.Year dummies have been taken into model as a control variable for trend.			

In the unit price model (3), unit price (natural log) is taken as a dependent variable. During initial two years price did not changed significantly but signs of the coefficients are still negative as after the imposition of duty prices increased significantly. So, we can say that the Indian AD policy has been ineffective even after the increase in the unit prices because there is no proportional decrease in the quantity imported.

The dummies *d1_aduty*, *d3_aduty* and *d4_aduty* are significant at 5% level of significance and the imposition of antidumping duties increase the import value by 37.30%, 69.72% and 96.40% in first, third and fourth year after the imposition, respectively. The coefficients of remaining dummies *d_ini*, *d1_ini*, *d2_aduty* are not

significant but their signs are positive. In the model 2 import quantity (natural log) has been taken as a dependent variable. Though import quantity is positive, it is not statistically significant. Since, the signaling and initiation effects are not significant for named countries; combined model results are presented where both the imposition and duty effects have been estimated together. The imposition effects on import quantity and unit price are not at all significant throughout the four years. Contrary to the expectations, the price effects of antidumping may not always be operative. One cannot, for instance, rule out the possibility that domestic importers bargain with the named exporters on prices when a duty is imposed and succeed in achieving downward revisions of the prices so as to ensure that the post-duty prices of named imports are at par with that of unnamed imports (Aggarwal, 2011).

Alternatively, competition may also force named firms to reduce their prices in response to the AD duty. This would make the AD actions neutral with regards to trade effects. However, this is more likely to be the case when the duty is low and its imposition does not change the relative prices significantly (Koning et al 2001). In India antidumping duties are not expressed at ad valorem rate, they are either specific or variable. Mehata (2003) estimated the ad valorem equivalence of these duties for selected products during April-December 2000 and found that more than 57 per cent duties were above 40 per cent during this period. Ganguli (2008) indicated that the average preliminary duty from 1992 to 2002 was 80.91 per cent, while the final duty was 77.41 per cent. Average MFN tariff rate in India declined continuously from 71 per cent in 1993 to 32 per cent in 2002-03. Since of the AD duties were pretty high we expect the price effects of AD duty on dumped imports to be significantly high.

Theoretically, the unit value must increase and the import value and volume both should fall after the antidumping initiations and duty imposition but our results are contradictory to this theory. The unit prices do not increase significantly though the signs are positive. Aggarwal (2011) pointed out that the price effect may not be significant due to the bargain between the named firms and importers. The import quantity has also not changed significantly consequently the import value has increased significantly during the first, third and fourth year after the duty imposition. This has happened due to the positive price effects and probably because of the inelastic demand for imports. It has kept import quantity unaltered but conversely the import value has gone up due to relatively higher unit prices.

As far as the duty effects are concerned, the unit prices increased during the second, third and fourth year. Though the increase in the unit prices is relatively, low it is statistically significant. Thus, we can conclude that the Indian Antidumping policy is ineffective and has failed to provide contingent protection to the domestic industries during 2003-2012. AD actions are separated into three parts, i.e., Signaling, Initiation, Duty Imposition on dumped import. The regression results of duty imposition effects and actual duty effects on the value, quantity and unit price of named countries are presented in Table 6.1. In the model 1 imposition effect and duty effects are observed through coefficients of the dummies *.d1_aduty*, *d3_aduty* and *d4_aduty* are statistically significant and coefficients are positive. Duty effect is shown by *adduty_d1a_imp*, *adduty_d2a_imp*, *adduty_d3a_imp* and *adduty_d4a_imp*. Besedes and Prusa (2016) found that AD actions increase hazard in every stage of AD initiation, but the smallest effect is during the final stage of duty imposition and larger effects already occur during the initiation and preliminary phases. The same has been observed here too. But in price model we can see that unit price marginally increased in second, third and fourth year after the imposition due to duty effect. So there are significant effects of duty imposition on the unit price and, therefore, unit price of named countries imports increases.

6.4 Industry Specific Trade Effects

1. Use Based Classification (Basic goods, Capital goods and Intermediate goods)

This section of the chapter deals with the industry specific trade effects on the imports from named countries. Previous studies have estimated industry-specific trade effects on HS classified industries. But here an attempt is made to estimate the same by using used-base classification given by the MOSPI³. Thus, the imported goods are classified based on its use by HS code into three categories, namely, Basic goods, Capital goods and Intermediate goods⁴. The results presented in Table 6.2 are estimated by taking import value of basic, capital and intermediate goods as a dependent variable. In given model *d1_ini*, *d1_aduty*, *d2_aduty*, *d3_aduty* and *d4_aduty* are used to control the effects due to initiation and imposition effect of the whole model. In this model imposition dummies for basic goods like *d1_aduty_bas*, *d2_aduty_bas*, *d3_aduty_bas* and *d4_aduty_bas* have negative coefficients. The same coefficients of dummies for

³ Ministry of Statistics and Programme Implementation.

⁴ The fourth category 'consumer goods' has been dropped from the analysis due to lack of observations.

capital goods are positive and for intermediate goods, the coefficients $d1_aduty_intermediate$ and $d2_aduty_intermediate$ are negative but not significant. It simply means that the basic goods are more affected by the imposition of duty. Import value of intermediate goods fall for two years after imposition marginally. For capital goods there is no significant change and coefficients are positive.

The initiation effect on capital goods is significant at 10 per cent level. The unit price falls during the initiation year by 32.15 per cent. The signs of coefficients of quantity dummies are positive but not significant. As a result, the sign of the coefficients of import value dummies is also negative. The imposition effect on capital goods is very significant. During the first year after the imposition, unit price rises sharply by 53.87 per cent and in the fourth year by 47.40 per cent, thereby, increasing the trade value significantly throughout the four years after the duty imposition. Even after a sharp rise in the unit prices of capital goods, import volume has not decreased and the sign of the coefficients are still positive. This indicates that demand for imports of capital goods is inelastic for India.

Surprisingly, there is no significant effect on the intermediate goods. Except a small initiation effect there is no major imposition effect on intermediate goods. This is an important factor that affects overall results and thus the coefficients of the overall regression are not statistically significant. It is because the intermediate goods have 70 per cent share in our total observations.

Table 6.2 : Trade Effects on Import Value of Basic, Capital and Intermediate Goods			
Variables	Value	Quantity	Unit value
	Model 1	Model 2	Model 3
ln_named_val			
L.ln_named_val	0.287** (2.563)	0.360*** (2.605)	-0.0155 (-0.169)
L2.ln_named_val	0.0544 (0.856)	0.0211 (0.279)	-0.00653 (-0.128)
d1_ini_bas	0.0657 (0.215)	-0.0926 (-0.263)	-0.0519 (-0.516)
d1_aduty_bas	-0.0434 (-0.164)	-0.00150 (-0.00502)	-0.0906 (-0.804)
d2_aduty_bas	-0.168 (-0.417)	-0.340 (-0.647)	0.0547 (0.350)
d3_aduty_bas	-0.168 (-0.428)	-0.245 (-0.518)	-0.0532 (-0.293)
d4_aduty_bas	-0.169 (-0.286)	-0.371 (-0.579)	0.0595 (0.277)
d1_ini_cap	-0.645 (-1.618)	0.0452 (0.0920)	-0.388* (-1.722)
d1_aduty_cap	0.732** (2.320)	0.360 (0.796)	0.431** (2.565)
d2_aduty_cap	0.398* (1.714)	0.262 (0.904)	0.280 (1.054)
d3_aduty_cap	0.593* (1.946)	0.369 (0.987)	0.236 (1.220)
d4_aduty_cap	0.604*** (2.693)	0.149 (0.564)	0.388** (2.124)
d1_ini_inter	-0.196 (-1.474)	-0.240* (-1.785)	0.0517 (0.919)
d1_aduty_inter	0.232 (1.641)	0.215 (1.325)	-0.0203 (-0.391)
d2_aduty_inter	0.120 (0.561)	0.0635 (0.288)	0.0173 (0.242)
d3_aduty_inter	0.335 (1.360)	0.167 (0.463)	-0.00355 (-0.0363)
d4_aduty_inter	0.440 (1.348)	0.298 (0.777)	0.00543 (0.0468)
Constant	9.149*** (4.451)	7.667*** (4.150)	2.194*** (5.305)
Observations	804	797	793
Number of id	138	135	135
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 #Model 1-Basic goods, Model 2- Capital goods, Model 3- Intermediate goods Note:-.1Year dummies have been taken into model as a control variable for trend.			

Table 6.3 : Trade Effects on Basic, Capital and Intermediate Goods (Unit Value)			
Variables	Basic	Capital	Intermediate
	Model 1	Model 2	Model 3
In_unit_val (Basic, Capital, Intermediate)#			
L.In_unit_val (Basic, Capital, Intermediate)#	-0.00459 (-0.0516)	-0.0217 (-0.231)	-0.0115 (-0.123)
L2.In_unit_val (Basic, Capital, Intermediate)#	-0.00668 (-0.122)	-0.00722 (-0.144)	-0.0119 (-0.227)
d1_ini	0.00951 (0.136)	0.0354 (0.694)	-0.212 (-1.633)
d1_aduty	0.0866 (1.434)	-0.0359 (-0.740)	0.184 (1.611)
d2_aduty	0.100 (1.264)	0.0233 (0.346)	0.201 (1.277)
d3_aduty	0.100 (1.107)	-0.0137 (-0.148)	0.146 (1.046)
d4_aduty	0.161 (1.484)	0.00929 (0.0843)	0.311** (2.073) (36.47)
d1_ini_bas (Basic, Capital, Intermediate)#	-0.0357 (-0.302) (-3.5)	-0.428** (-2.091) (-34.81)	0.279** (2.305) (32.18)
d1_aduty_bas (Basic, Capital, Intermediate)#	-0.157 (-1.283)	0.472*** (2.718) (60.31)	-0.194 (-1.616)
d2_aduty_bas (Basic, Capital, Intermediate)#	-0.00460 (-0.0276)	0.263 (0.947)	-0.167 (-1.007)
d3_aduty_bas (Basic, Capital, Intermediate)#	-0.0977 (-0.541)	0.254 (1.207)	-0.118 (-0.780)
d4_aduty_bas (Basic, Capital, Intermediate)#	-0.0190 (-0.0887)	0.380* (1.912) (46.22)	-0.268* (-1.664) (-23.50)
Constant	2.213*** (5.289)	2.205*** (5.266)	2.729*** (5.758)
Year dummy (I.year)	YES	YES	YES
Observations	793	793	793
Number of id	135	135	135
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 #Model 1-Basic goods, Model 2- Capital goods, Model 3- Intermediate goods Note:- 1Year dummies have been taken into model as a control variable for trend.			

In Table 6.3 the import unit price from named countries of Basic goods, Capital goods and Intermediate goods are taken as dependent variable in the respective model. Dummies *d1_ini*, *d1_aduty*, *d2_aduty*, *d3_aduty* and *d4_aduty* to control the effects due to initiation and imposition effect of the whole model. Here in this model *d1_ini_capital*, *d1_aduty_capital* and *d4_aduty_capital* show significant decrease, increase and increase respectively. In the initiation year capital goods price reduces by 34.81% and increase in the first and fourth year of imposition by 60.31% and 46.22%.

For intermediate goods it increases by 32.18% in the initiation year and reduces by 23.5% in the fourth year of imposition. But there is no significant decrease or increase in the unit price of the basic goods.

The results presented in Table 6.4 are also consistent with the results of the synthesis model. Here also the import value of Basic goods falls significantly during the third and fourth year. The import value of Capital goods increases in the first year after the duty imposition and the intermediate goods coefficients are positive though not significant indicating the intermediate goods are most unaffected group of commodities.

Table 6.4 : Trade Effects on Basic, Capital and Intermediate Goods (Import Value)			
Variables	Basic	Capital	Intermediate
	Model 1	Model 2	Model 3
ln_named_val (Basic, Capital, Intermediate)#			
L. ln_named_val (Basic, Capital, Intermediate)#	0.279** (2.470)	0.293*** (2.589)	0.285** (2.549)
L2. ln_named_val (Basic, Capital, Intermediate)#	0.0550 (0.870)	0.0536 (0.848)	0.0567 (0.900)
d1_ini	-0.259* (-1.925) (-22.81)	-0.152 (-1.103)	-0.300 (-1.166)
d1_aduty	0.343** (2.195) (40.91)	0.188 (1.399)	0.390 (1.596)
d2_aduty	0.206 (0.992)	0.0800 (0.387)	0.195 (0.748)
d3_aduty	0.435* (1.657) (54.49)	0.260 (1.050)	0.351 (1.137)
d4_aduty	0.548* (1.915) (72.97)	0.361 (1.086)	0.424* (1.720) (52.80)
d1_ini_bas (Basic, Capital, Intermediate)#	0.326 (1.097)	-0.515 (-1.269)	0.122 (0.470)
d1_aduty_bas (Basic, Capital, Intermediate)#	-0.375 (-1.471)	0.527* (1.788) (69.38)	-0.142 (-0.626)
d2_aduty_bas (Basic, Capital, Intermediate)#	-0.341 (-0.905)	0.296 (1.363)	-0.0526 (-0.216)
d3_aduty_bas (Basic, Capital, Intermediate)#	-0.538* (-1.720) (-41.60)	0.320 (1.429)	0.0181 (0.0930)
d4_aduty_bas (Basic, Capital, Intermediate)#	-0.627 (-1.309) (-46.58)	0.235 (0.547)	0.0560 (0.171)
Constant	9.524*** (4.584)	9.315*** (4.481)	9.428*** (4.591)
Year dummy (1. year)	YES	YES	YES
Observations	804	804	804
Number of id	138	138	138
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 #Model 1-Basic goods, Model 2- Capital goods, Model 3- Intermediate goods Note:-Year dummies have been taken into model as a control variable for trend.			

In Table 6.5 the import quantity from named countries of Basic goods, Capital goods and Intermediate goods are taken as a dependent variable in the respective model. Dummies $d1_ini$, $d1_aduty$, $d2_aduty$, $d3_aduty$ and $d4_aduty$ to control the effects due to initiation and imposition effect of the whole model. The imposition dummies for basic goods like $d1_aduty_bas$, $d2_aduty_bas$, $d3_aduty_bas$ and $d4_aduty_bas$ shows negative coefficient. Therefore the quantity of basic goods decreases marginally. There is no significant change in the quantity of import of capital and intermediate goods.

Table 6.5 : Trade Effects on Basic, Capital and Intermediate Goods (Import Quantity)			
Variables	Basic	Capital	Intermediate
	Model 1	Model 2	Model 3
ln_named_qty (Basic, Capital, Intermediate)#			
L.ln_named_qty (Basic, Capital, Intermediate)#	0.361*** (2.724)	0.363*** (2.576)	0.375*** (2.732)
L2.ln_named_qty (Basic, Capital, Intermediate)#	0.0223 (0.288)	0.0193 (0.255)	0.0240 (0.320)
d1_ini	-0.218* (-1.678) (-19.58)	-0.215 (-1.490)	-0.0418 (-0.152)
d1_aduty	0.228 (1.374)	0.180 (1.191)	0.188 (0.639)
d2_aduty	0.0823 (0.416)	0.00106 (0.00480)	0.00902 (0.0292)
d3_aduty	0.174 (0.538)	0.109 (0.320)	0.157 (0.464)
d4_aduty	0.227 (0.758)	0.217 (0.575)	0.0254 (0.0959)
d1_ini_bas (Basic, Capital, Intermediate)#	0.0945 (0.271)	0.229 (0.451)	-0.217 (-0.752)
d1_aduty_bas (Basic, Capital, Intermediate)#	-0.248 (-0.815)	0.163 (0.358)	0.0213 (0.0688)
d2_aduty_bas (Basic, Capital, Intermediate)#	-0.436 (-0.855)	0.247 (0.767)	0.0324 (0.100)
d3_aduty_bas (Basic, Capital, Intermediate)#	-0.407 (-0.943)	0.254 (0.607)	-0.0242 (-0.0645)
d4_aduty_bas (Basic, Capital, Intermediate)#	-0.592 (-1.039)	-0.0640 (-0.126)	0.227 (0.532)
Constant	7.619*** (4.159)	7.640*** (4.020)	6.692*** (3.578)
Year dummy (I.year)	YES	YES	YES
Observations	797	797	797
Number of id	135	135	135
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 #Model 1-Basic goods, Model 2- Capital goods, Model 3- Intermediate goods Note:-.Year dummies have been taken into model as a control variable for trend.			

Thus, results of the partial regression are consistent with results of the synthesis model. Though in some cases it loses its statistical significance, both the results have importance for its use.

Thus, there is a trade destruction effect only on basic goods though not significant. The trade value of the capital goods and intermediate goods does not fall, rather it increases significantly in the case of capital goods. The results are indicative and pose a serious question on the effectiveness of Indian AD policy. In a nutshell, Indian AD policy seems to be ineffective to protect its domestic industries from the foreign predatory actions. Therefore, Indian AD policy needs to be used carefully and selectively.

Conclusions derived from the synthesis model analysis are corroborated by the partial regression of all the three groups of commodities. The results of the partial regressions are presented in Tables (6.3 to 6.5). These regressions are run separately for all the three groups and for all the three variables, i.e., import value, import quantity and unit price.

6.5 HS Code Based Classification (Base metals, Chemical products, Plastic and Rubber, Machinery, minerals, paper, etc.)

Though the overall trade effects are not seen to be significant in the first section of the chapter, further disaggregation of overall imports into basic, capital and intermediate goods has helped us to understand the trade effects at a disaggregated level for different industries. Here, it has been further disaggregated India's total imports on the basis of HS code classification and the trade effects on each category have been separately observed. There are broadly six groups of commodities that emerge from the data but there are no watertight compartments among the groups. These groups are Base-Metals, Minerals, Machineries, Vehicles, 'Chemicals and Plastics' (including Rubber) and Textiles and Papers. They have been grouped primarily on the basis of HS two digits and further due to lack of sufficient observations, in some cases basic similarities in the nature of the commodity for example Chemicals and Plastics and Textiles and Papers are the groups where their HS digits are different but basic nature is the same.

We know that most of the antidumping cases were filed in Metals and metal products (XV), Chemical products (VI), Machinery, electrical appliances (XVI), Plastic and rubber products (VII), and Textiles (XI) sectors globally. Therefore, it is imperative to see the trade effects on these sectors independently. To perform this activity group

dummies for each category has been generated. I have used dummies for these sectors by assigning 1 for the particular category and 0 otherwise.

Here too, we have run two sets of regression, synthesis model and individual regressions. And the results of both support each other. Therefore only individual regression results are presented here. The results of synthesis model are given in Appendix 4.

The results are clear and indicative, The trade effects on all the six groups are broadly different and that shows that the sensitivity of the industries to the antidumping duty is different. Some of the industries are very sensitive but others are not at all sensitive and there is no fall in the trade of that particular commodity. Table 6.6 shows the result of the group base-metals. There are no significant trade effects on the unit price of the base-metals but the sign of the coefficients are negative. Even the import quantity coefficients in model 2 are negative but statistically not significant. Since the signs of coefficients for the unit price and import quantity are negative import value is also decreasing. It falls significantly in the third year after the imposition by 41.60 per cent.

The results for the Minerals group are given in Table 6.7. The significant initiation effects are seen on this group. The unit price increases significantly during the year of initiation by 37.57 per cent, whereas both the import quantity and the import value have negative signs though not significant. After the imposition of the duty, the unit price surprisingly falls instead of increasing. It falls during the first two years immediately after the duty imposition. The drop in price is 26 in the first year after imposition, which is significant. It starts increasing during the third year. As a result of the changes in the unit price and import quantity, the import value also increases during the first two years and then falls in the third and fourth year.

Table 6.6 : Trade Effects on Base Metals			
Variables	Value	Quantity	Unit value
	Model 1	Model 2	Model 3
ln_named_val			
L.ln_named_val	0.279** (2.470)	0.361*** (2.724)	-0.00459 (-0.0516)
L2.ln_named_val	0.0550 (0.870)	0.0223 (0.288)	-0.00668 (-0.122)
d1_ini	-0.259* (-1.925)	-0.218* (-1.678)	0.00951 (0.136)
d1_aduty	0.343** (2.195)	0.228 (1.374)	0.0866 (1.434)
d2_aduty	0.206 (0.992)	0.0823 (0.416)	0.100 (1.264)
d3_aduty	0.435* (1.657)	0.174 (0.538)	0.100 (1.107)
d4_aduty	0.548* (1.915)	0.227 (0.758)	0.161 (1.484)
d1_ini_basemetals	0.326 (1.097)	0.0945 (0.271)	-0.0357 (-0.302)
d1_aduty_basemetals	-0.375 (-1.471)	-0.248 (-0.815)	-0.157 (-1.283)
d2_aduty_basemetals	-0.341 (-0.905)	-0.436 (-0.855)	-0.00460 (-0.0276)
d3_aduty_basemetals	-0.538* (-1.720)	-0.407 (-0.943)	-0.0977 (-0.541)
d4_aduty_basemetals	-0.627 (-1.309)	-0.592 (-1.039)	-0.0190 (-0.0887)
Constant	9.273*** (4.488)	7.619*** (4.159)	2.724*** (5.792)
Observations	804	797	793
Number of id	138	135	135
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 Note:- Year dummies have been taken into model as a control variable for trend			

Table 6.7 : Trade Effects on Minerals			
Variables	Value	Quantity	Unit value
	Model 1	Model 2	Model 3
ln_named_val			
L.ln_named_val	0.280** (2.454)	0.360*** (2.692)	-0.0162 (-0.179)
L2.ln_named_val	0.0535 (0.848)	0.0197 (0.256)	-0.0120 (-0.224)
d1_ini	-0.211 (-1.531)	-0.206 (-1.513)	-0.0115 (-0.180)
d1_aduty	0.287* (1.852)	0.182 (1.117)	0.0683 (1.190)
d2_aduty	0.156 (0.751)	0.0131 (0.0639)	0.102 (1.372)
d3_aduty	0.374 (1.392)	0.129 (0.404)	0.0862 (0.971)
d4_aduty	0.492* (1.652)	0.177 (0.578)	0.157 (1.459)
d1_ini_minerals	-0.0208 (-0.0843)	-0.0295 (-0.0884)	0.319** (2.317)
d1_aduty_minerals	0.165 (0.631)	0.387 (1.144)	-0.301** (-2.043)
d2_aduty_minerals	0.556 (1.589)	0.538 (1.394)	-0.0241 (-0.202)
d3_aduty_minerals	-0.00589 (-0.0124)	-0.292 (-0.428)	0.185 (1.039)
d4_aduty_minerals	-0.173 (-0.375)	-0.455 (-0.696)	0.182 (1.014)
Constant	9.544*** (4.550)	7.645*** (4.133)	2.746*** (5.758)
Observations	804	797	793
Number of id	138	135	135
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 Note:-1. Year dummies have been taken into model as a control variable for trend			

Effects on the machineries industry are also significant and different from both base-metals and minerals industries. The sign of the Dummy *d1_ini_machines* is negative. It shows that machines import value decreases during the period of initiation due to 40 per cent drop the unit price in the same period. Signs of the coefficients of import

value dummies are positive throughout though not significant for rest of the years except first year after imposition. The unit increases after the imposition of the duty in the first year by 73.50 per cent. And as result of this the import value goes up by 74.54 per cent. The unit price increases significantly by 67.53 per cent again in the fourth year after the imposition. Even after significant rise in unit price the import quantity does not change significantly. This indicates that the import demand for this industry is inelastic and, therefore, trade value increases instead of decreasing.

Table 6.8 : Trade Effects on Machineries			
Variables	Value	Quantity	Unit value
	Model 1	Model 2	Model 3
ln_named_val			
L.ln_named_val	0.290** (2.555)	0.365*** (2.605)	-0.0281 (-0.294)
L2.ln_named_val	0.0524 (0.830)	0.0187 (0.244)	-0.00669 (-0.134)
d1_ini	-0.152 (-1.107)	-0.216 (-1.515)	0.0371 (0.718)
d1_aduty	0.190 (1.465)	0.189 (1.291)	-0.0390 (-0.828)
d2_aduty	0.0924 (0.460)	0.0169 (0.0790)	0.0136 (0.206)
d3_aduty	0.265 (1.092)	0.128 (0.386)	-0.0355 (-0.388)
d4_aduty	0.387 (1.203)	0.248 (0.680)	-0.0171 (-0.154)
d1_ini_machines	-0.622 (-1.387)	0.266 (0.486)	-0.507** (-2.228)
d1_aduty_machines	0.557* (1.674)	0.0988 (0.195)	0.551*** (2.997)
d2_aduty_machines	0.234 (1.061)	0.162 (0.485)	0.333 (1.080)
d3_aduty_machines	0.278 (1.198)	0.162 (0.369)	0.360 (1.565)
d4_aduty_machines	0.0609 (0.137)	-0.280 (-0.553)	0.516** (2.365)
Constant	9.356*** (4.480)	7.627*** (4.010)	2.720*** (5.779)
Observations	804	797	793
Number of id	138	135	135
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 Note:-Year dummies have been taken into model as a control variable for trend			

There are no signaling and initiation effects on Vehicles. But there are significant duty imposition effects throughout the four years after imposition. The unit price here, unlike earlier groups, decreases after the duty imposition throughout by 19.74 per cent, 20.30 per cent, 44.66 per cent and 44.66 per cent from the first to fourth year respectively. This indicates that the domestic importers have succeeded in getting the downward revisions in the unit prices. Due to decrease in the unit prices both import quantity and import values have increased. The import quantity increased by 93.47 per cent and 188 per cent during the second and fourth year respectively. Though the increase in the quantity is very high but due to a decrease in the unit prices, the import value has not changed significantly except in the second year by 52 per cent. Thus the Indian AD policy does not seem to be effective enough to protect domestic suppliers of the vehicles.

Table 6.9 : Trade Effects on Vehicles			
Variables	Value	Quantity	Unit value
	Model 1	Model 2	Model 3
ln_named_val			
L.ln_named_val	0.282** (2.484)	0.371*** (2.763)	-0.0152 (-0.166)
L2.ln_named_val	0.0523 (0.837)	0.0208 (0.273)	-0.0124 (-0.229)
d1_ini	-0.221 (-1.618)	-0.206 (-1.526)	0.000738 (0.0116)
d1_aduty	0.291* (1.870)	0.184 (1.134)	0.0674 (1.188)
d2_aduty	0.155 (0.740)	0.00784 (0.0384)	0.111 (1.475)
d3_aduty	0.362 (1.355)	0.107 (0.338)	0.106 (1.179)
d4_aduty	0.457 (1.534)	0.133 (0.441)	0.182* (1.686)
d1_ini_vehicles	0.644 (1.535)	-0.0583 (-0.135)	0.233 (0.645)
d1_aduty_vehicles	0.110 (0.348)	0.560 (1.396)	-0.220* (-1.749)
d2_aduty_vehicles	0.419** (2.034)	0.660*** (2.966)	-0.277** (-2.300)
d3_aduty_vehicles	0.207 (0.547)	0.697 (1.406)	-0.514* (-1.773)
d4_aduty_vehicles	0.733 (1.459)	1.059*** (2.625)	-0.539*** (-3.524)
Constant	9.272*** (4.494)	7.502*** (4.061)	2.764*** (5.794)
Observations	804	797	793
Number of id	138	135	135
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 Note:-Year dummies have been taken into model as a control variable for trend.			

The results for group Chemicals and Plastics is presented in Table 6.10. This group has maximum number of observations in the sample and therefore it is capable of affecting the overall results. Therefore, the trade effects on this sector are important. The unit price of the group increased during the period of investigation by 16.76 per cent but there was no significant change in the import quantity and import value during. Though the dummy *d1_aduty* in model 3 is positive and significant, the dummy *d1_aduty_chem_plast* in negative and significant. That denotes the difference in the overall trend and changes in chemicals and plastic industries. Though the overall trend is increasing unit price, the unit prices of chemicals and plastics declined significantly by 16.55 per cent in the first year after the duty imposition. There are similar result in model 1 and model 2, where the import value and import quantity seem to be decreasing but not significantly.

Variables	Value	Quantity	Unit value
	Model 1	Model 2	Model 3
ln_named_val			
L.ln_named_val	0.284** (2.543)	0.372*** (2.761)	-0.00334 (-0.0358)
L2.ln_named_val	0.0561 (0.891)	0.0227 (0.301)	-0.00527 (-0.100)
d1_ini	-0.377* (-1.780)	-0.202 (-0.887)	-0.0941 (-0.969)
d1_aduty	0.387* (1.745)	0.235 (0.910)	0.164* (1.765)
d2_aduty	0.280 (1.161)	0.166 (0.621)	0.183 (1.372)
d3_aduty	0.337 (1.111)	0.233 (0.753)	0.136 (1.123)
d4_aduty	0.477* (1.824)	0.222 (0.908)	0.266** (2.023)
d1_ini_chem_plast	0.289 (1.356)	0.00661 (0.0287)	0.155* (1.717)
d1_aduty_chem_plast	-0.173 (-0.829)	-0.0592 (-0.212)	-0.181* (-1.786)
d2_aduty_chem_plast	-0.215 (-0.937)	-0.223 (-0.760)	-0.150 (-1.034)
d3_aduty_chem_plast	0.0411 (0.206)	-0.151 (-0.395)	-0.0976 (-0.720)
d4_aduty_chem_plast	-0.0411 (-0.141)	-0.0681 (-0.171)	-0.207 (-1.467)
Constant	9.195*** (4.479)	7.482*** (4.094)	2.194*** (5.198)
Observations	804	797	793
Number of id	138	135	135
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 Note:-Year dummies have been taken into model as a control variable for trend			

Table 6.11 gives us the result of trade effects on the textiles and paper industries. In the case of these industries only initiation effects are observed to be significant but duty effects are insignificant throughout the four years after the duty imposition in all the three models. Both the import value and import quantity dropped significantly during the initiation or investigation period by 48.10 per cent and 41.89 per cent respectively in model 1 and model 2. Thus there are no significant duty effects are seen on the textiles and the paper industries but there are very strong signaling and initiation effects are seen.

Variables	Value	Quantity	Unit value
	Model 1	Model 2	Model 3
ln_named_val			
L.ln_named_val	0.266** (2.541)	0.346*** (2.698)	-0.0123 (-0.135)
L2.ln_named_val	0.0488 (0.788)	0.0141 (0.190)	-0.0103 (-0.192)
d1_ini	-0.148 (-1.084)	-0.135 (-1.011)	-0.00833 (-0.126)
d1_aduty	0.281* (1.850)	0.174 (1.094)	0.0507 (0.868)
d2_aduty	0.140 (0.660)	-0.0276 (-0.131)	0.0994 (1.299)
d3_aduty	0.391 (1.441)	0.102 (0.312)	0.0860 (0.961)
d4_aduty	0.490 (1.631)	0.121 (0.387)	0.160 (1.465)
d1_ini_text_papers	-0.543* (-1.708)	-0.656* (-1.673)	0.144 (1.598)
d1_aduty_text_papers	0.137 (0.231)	0.222 (0.298)	0.185 (1.133)
d2_aduty_text_papers	0.463 (0.830)	0.905 (1.383)	0.0410 (0.266)
d3_aduty_text_papers	-0.0618 (-0.103)	0.550 (0.878)	0.0247 (0.167)
d4_aduty_text_papers	0.239 (0.378)	0.886 (1.359)	-0.0279 (-0.166)
Constant	9.571*** (4.941)	7.888*** (4.577)	2.748*** (5.767)
Observations	804	797	793
Number of id	138	135	135
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 Note:-Year dummies have been taken into model as a control variable for trend			

6.6 Region-Specific Trade Effects

In this section an attempt to see the region-specific trade effects. The region here is not the geographical term but a group of countries with similarities. For this purpose, countries in the sample are divided into two groups, Developed and Emerging. Coincidentally, there are eight countries-four Developed and four Emerging. This makes it interesting to see the relative responses of the groups to the Indian AD actions. The results of the synthesis model where both the groups are taken together in a single equation are presented in Table 6.13 bellow. The initiation and imposition dummies have been dropped deliberately to see the effects on both the groups.

Table 6.13 : Trade Effects on Emerging and Developed Countries (Synthesis Model)			
Variables	Value	Quantity	Unit Value
	Model 1	Model 2	Model 3
L.ln_named_val	0.286** (2.545)	0.378*** (2.818)	-0.0178 (-0.197)
L2.ln_named_val	0.0579 (0.918)	0.0271 (0.356)	-0.0158 (-0.300)
emrg_d1_ini	-0.215 (-1.306)	-0.196 (-1.174)	-0.0327 (-0.387)
emrg_d1_aduty	0.171 (0.946)	0.0709 (0.378)	0.0700 (0.985)
emrg_d2_aduty	0.0605 (0.271)	-0.0191 (-0.0916)	0.0716 (0.782)
emrg_d3_aduty	0.271 (0.877)	0.153 (0.525)	0.0599 (0.717)
emrg_d4_aduty	0.485 (1.352)	0.291 (0.914)	0.0871 (1.026)
dev_d1_ini	-0.212 (-1.347)	-0.221 (-1.419)	0.0576 (0.934)
dev_d1_aduty	0.482*** (2.630)	0.381* (1.767)	0.0459 (0.721)
dev_d2_aduty	0.319 (1.240)	0.0787 (0.273)	0.134 (1.627)
dev_d3_aduty	0.517** (1.994)	0.0730 (0.146)	0.119 (0.862)
dev_d4_aduty	0.470 (1.502)	-0.0480 (-0.110)	0.249 (1.395)
Constant	9.155*** (4.457)	6.612*** (3.535)	2.790*** (5.829)
Year dummy (I.year)	YES	YES	YES
Observations	804	797	793
Number of id	138	135	135
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 Note:-Year dummies have been taken into model as a control variable for trend			

It is evident from the results that the trade effects on the import value, import volume and unit prices of both the groups are different. As far as initiation effects are concerned, it is not significant for both the groups. But the imposition effects are different. No imposition effects are seen at all on import value, import quantity and unit value of emerging countries. Conversely, the import quantity and import value of developed countries increased in the first year by 46.37 per cent and 61.93 per cent respectively. Import value of the developed group increased again in the third year by 67.69 per cent which is a significant change.

6.7 Trade Effects -Unnamed Countries

a. Overall Trade Effects

This section deals with the trade effects of Indian antidumping policy on imports from the unnamed countries. In this model, I have taken India's import value (natural log) of dumped goods from the unnamed countries⁵ as a dependent variable. The rest of the structure of the model remains the same. The econometric specifications of the model are given in the previous chapter.

Theoretically, there should not be trade destruction effects on trade from unnamed countries because it is not subject to the antidumping duty. Rather it should increase in the case of trade diversion. Brenton (2001) investigated the effects of EU antidumping measures. His analysis of the impact of antidumping actions in the EU on named countries and unnamed countries of the EU and rest of the world reveals that the EU's antidumping policy causes trade diversion primarily to non-EU suppliers. This section is crucial in determining the trade diversion effects of Indian antidumping policy. If import, from unnamed countries after initiation of antidumping investigation and subsequently duty imposition on them from the named countries increases, then there is trade diversion, otherwise it is not there.

Considering the lag in the trade effects, the coefficients of the dummies d_{ini} and $d1_{ini}$ are taken as indicator of signaling and initiation effects of antidumping respectively. The other dummies such as $d1_{aduty}$, $d2_{aduty}$, $d3_{aduty}$ and $d4_{aduty}$ are used to show the effect after the imposition of antidumping duties.

⁵ Unnamed countries are those countries which were not named in the Antidumping Initiations by the Indian authority

Results of the unnamed countries trade effects model are presented in Table 6.14. In the unit value column (model 3) coefficients of $d1_aduty$, $d2_aduty$, $d3_aduty$ and $d4_aduty$ are significant at 1% level of significance. It is so obvious that due to an apprehension of being the next AD target of Indian AD Authority, the suppliers from unnamed countries revised their prices and so the unit price of imports from unnamed countries rose in the investigation period significantly at 19.96%, 21.4%, 45.79% and 58.24% respectively. There is no effect on the quantity imported as it is not significant. So this combined effect is resulting in import value as shown by the imposition dummies of value model. The import value rose by 23.98% in first year, 34.04% in third year and 38.81% in the fourth year.

Variables	Value	Quantity	Unit Value
	Model 1	Model 2	Model 3
L.ln_unnamed_(val, qty, unit_val)	0.149 (1.496)	0.186* (1.939)	0.103 (1.481)
L2.ln_unnamed_(val, qty, unit_val)	0.0375 (0.370)	-0.0759 (-1.586)	0.0319 (0.495)
d_ini	-0.0125 (-0.153)	-0.0829 (-0.905)	0.0475 (0.741)
d1_ini	-0.0374 (-0.344)	0.0131 (0.0966)	0.0259 (0.241)
d1_aduty	0.215*** (3.575)	0.0723 (1.077)	0.182*** (3.419)
d2_aduty	0.133 (1.344)	0.0430 (0.525)	0.194*** (3.066)
d3_aduty	0.293** (2.253)	0.0812 (0.732)	0.377*** (4.963)
d4_aduty	0.328** (2.343)	0.0635 (0.557)	0.459*** (4.637)
Constant	12.90*** (5.969)	13.16*** (9.177)	1.403*** (3.677)
Year dummy (1.year)	YES	YES	YES
Observations	814	785	778
Number of id	138	132	132
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 Note:-Year dummies have been taken into model as a control variable for trend.			

There is an alternative explanation to the increase in the unit prices of unnamed countries. The rise in unit prices of dumped imports from named countries may induce unnamed countries to raise their prices. Their behaviour would, however, depend on the reputation effect, namely, how frequently the country has resorted to the repeated use of AD action against the same product from different countries in the

past. The greater the frequency of the repeated use of such actions by the country in the past, the larger the reputation effect and the more likelihood that the non-named countries' firms would not pick up the trade lost to those named in the investigations the fear that their imports too might be subjected to AD actions. We thus expect that the price effect of AD duties on imports from unnamed countries may also be significant in India.

Table 6.15 : Trade Effects on Unnamed Countries (Actual Duty Effects)			
Variables	Value	Quantity	Unit Value
	Model 1	Model 2	Model 3
ln_unnamed_val			
L.ln_unnamed_val	0.114 (1.072)	0.137 (1.384)	0.105 (1.521)
L2.ln_unnamed_val	0.0130 (0.129)	-0.0963** (-2.019)	0.0346 (0.524)
d1_aduty	0.199*** (3.353)	0.106* (1.674)	0.172*** (3.465)
d2_aduty	0.109 (1.197)	0.0638 (0.869)	0.171*** (3.053)
d3_aduty	0.261** (2.175)	0.0821 (0.796)	0.348*** (4.588)
d4_aduty	0.304** (2.388)	0.0693 (0.637)	0.411*** (4.108)
adduty_d1a_imp	0.00444 (0.742)	-0.000373 (-0.0483)	0.00670 (1.319)
adduty_d2a_imp	0.0127* (1.892)	0.0125 (1.352)	0.00860 (1.241)
adduty_d3a_imp	0.0195** (2.112)	0.0234** (2.171)	0.00588 (0.637)
adduty_d4a_imp	0.0157 (1.606)	0.0211* (1.820)	0.00936 (0.878)
Constant	13.80*** (5.837)	14.13*** (9.654)	1.374*** (3.670)
Year dummy (I.year)	YES	YES	YES
Observations	814	785	778
Number of id	138	132	132
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 Note:-Year dummies have been taken into model as a control variable for trend.			

In Table 6.15, regression results for actual duty effects on the value, quantity and unit price of unnamed countries are shown. In this model we have estimated the effect of imposition and actual duty effect by segregating it. In the unit price model *d1_aduty*, *d2_aduty*, *d3_aduty* and *d4_aduty* are statistically significant at 1% level of significance and signs of the coefficients are positive, whereas coefficients of the

Duty effect dummies *adduty_d1a_imp*, *adduty_d2a_imp*, *adduty_d3a_imp* and *adduty_d4a_imp* are not statistically significant. This could be due to the fact that the price effect is already captured by imposition dummies. It can be further split into duty price effect and non-duty price effect. It is evident from the results that the duty price effect is not significant which is consistent with our hypothesis. But overall price effect is positive because of non-duty price effects. This may be due to the signals or threat of being the next target. Besedes and Prusa (2016) found that AD action increases hazard in every stage, but the smallest effect is during the final AD stages duty phase and larger effects during the initiation and preliminary phases. Here also coefficients of duty dummies show the lesser effect as depicted by their coefficients. But in price model we can see that unit price marginally increased in second, third and fourth year after imposition due to duty effect.

6.8 Industry Specific Trade Effects

1. Use-Based classification (Basic goods, Capital goods and Intermediate goods)

As far as the initiation effects of basic goods are concerned, it is significant. A coefficient of the initiation dummy *d1_ini_bas* in model 3 is negative and statistically significant at even 5 per cent level. The unit price of basic goods fell by 27.60 per cent during the investigation period, consequently the import value fell by 18.61 per cent during the same period. But there is no significant change in the import quantity.

Though the duty imposition effects are not statistically significant, the signs of the coefficients are indicative. After the duty imposition, signs of the coefficients of unit value dummies turn positive during first three years. Similarly, the signs of quantity dummies turn negative during the first two years and later the import quantity of basic goods increases significantly by 43.9 per cent and 49 per cent during the third and fourth year respectively.

The signs of coefficients of the dummies of import value are also negative during the first two years but due to a significant increase in the import quantity. The import value also increases significantly during the third and fourth year. This is partly caused by the significant drop in the unit price and in the fourth year it fell by 39.34 per cent.

Initiation effect on capital goods is significant. The trade value dropped by 31.33 per cent during the year of initiation. The unit price did not change significantly but its signs are positive. Signs of the dummy coefficients for quantity are positive but not significant. The imposition effects of the capital goods are typical, The unit price increases after the duty imposition during the third and fourth year by 86.26 per cent and 100 per cent respectively. As a result of increase in the unit price, the import quantity dropped heavily by 46.47 per cent and 39.10 per cent in the same years. Surprisingly, the trade value has not changed but the signs of the dummy coefficients are positive. This could be a proportionate decrease in the import quantity.

In the total number of observations in the entire sample, the intermediate goods have 70 per cent share. Therefore, it has the capacity to influence overall model results and that is why it would be interesting to know how they respond to antidumping actions. The initiation effects on the intermediate goods are not significant in all the three models. But the imposition effects on them are significant. The unit price increases at the increasing rate, i.e. by 17.35%, 15.25%, 34.44% and 46.81% during first to fourth year respectively. The import quantity also increases significantly by 19.72 per cent and 25.60 per cent in the first and third year after imposition. Consequently, the trade value increases significantly by 29.30 per cent, 31.39 per cent and 35.39 per cent in the first, third and fourth year after the imposition respectively. This phenomenon seems surprising and needs further investigation as to why the unit price and quantity both increased at the same time. One explanation to this could be the trade diversion. It is possible that the trade in intermediate goods is diverted through the countries which are not named in the petition. So there is trade diversion in the case of intermediate goods.

Table 6.16 : Trade Effects on Basic, Capital and Intermediate Goods (Synthesis Model)

Variables	Value	Quantity	Unit Value
	Model 1	Model 2	Model 3
ln_unnamed_val			
L.ln_unnamed_val	0.156 (1.560)	0.170* (1.772)	0.0719 (1.030)
L2.ln_unnamed_val	0.0231 (0.226)	-0.0747 (-1.605)	0.0151 (0.222)
d1_ini_bas	-0.206* (-1.650)	0.165 (1.073)	-0.323** (-2.467)
d1_aduty_bas	-0.107 (-1.242)	-0.241 (-1.638)	0.0996 (0.926)
d2_aduty_bas	-0.0164 (-0.118)	-0.107 (-0.511)	0.0923 (0.550)
d3_aduty_bas	0.350** (2.007)	0.364* (1.691)	-0.0551 (-0.391)
d4_aduty_bas	0.0668 (0.276)	0.399* (1.762)	-0.500*** (-2.680)
d1_ini_cap	-0.376* (-1.930)	0.302 (0.963)	-0.199 (-0.831)
d1_aduty_cap	0.131 (1.019)	-0.104 (-0.634)	0.244 (1.631)
d2_aduty_cap	0.0624 (0.507)	-0.176 (-1.115)	0.245 (1.412)
d3_aduty_cap	0.0201 (0.142)	-0.625*** (-2.725)	0.622*** (3.131)
d4_aduty_cap	0.122 (0.754)	-0.496** (-2.181)	0.693*** (3.120)
d1_ini_inter	0.0644 (0.708)	0.0315 (0.262)	0.0920 (0.780)
d1_aduty_inter	0.257*** (3.727)	0.180** (2.216)	0.160*** (2.622)
d2_aduty_inter	0.120 (1.019)	0.145 (1.441)	0.142* (1.818)
d3_aduty_inter	0.273* (1.760)	0.228* (1.696)	0.296*** (2.912)
d4_aduty_inter	0.303* (1.882)	0.186 (1.429)	0.384*** (3.319)
Constant	12.94*** (6.093)	13.38*** (9.742)	1.402*** (5.843)
Observations	814	785	778
Number of id	138	132	132

Robust z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note:-Year dummies have been taken into model as a control variable for trend.

Table 6.17 : Trade Effects on Basic, Capital and Intermediate Goods (Import Value)			
Variables	Basic	Capital	Intermediate
	Model 1	Model 2	Model 3
L.ln_unnamed_val	0.140 (1.410)	0.153 (1.514)	0.156 (1.545)
L2.ln_unnamed_val	0.0365 (0.356)	0.0160 (0.156)	0.0237 (0.235)
d1_ini	0.0251 (0.288)	0.0191 (0.231)	-0.284** (-2.355)
d1_aduty	0.266*** (4.186)	0.194*** (3.050)	0.0221 (0.259)
d2_aduty	0.155 (1.457)	0.0960 (0.921)	0.0361 (0.356)
d3_aduty	0.279** (2.027)	0.290** (2.064)	0.173 (1.346)
d4_aduty	0.353** (2.474)	0.281* (1.852)	0.125 (0.839)
d1_ini_bas (Basic, Capital, Intermediate)#	-0.212 (-1.570)	-0.422** (-2.032)	0.361** (2.511)
d1_aduty_bas (Basic, Capital, Intermediate)#	-0.349*** (-3.879)	-0.0665 (-0.507)	0.239** (2.497)
d2_aduty_bas (Basic, Capital, Intermediate)#	-0.137 (-0.846)	-0.0190 (-0.141)	0.0915 (0.714)
d3_aduty_bas (Basic, Capital, Intermediate)#	0.114 (0.621)	-0.257 (-1.562)	0.118 (0.736)
d4_aduty_bas (Basic, Capital, Intermediate)#	-0.235 (-0.992)	-0.164 (-0.920)	0.200 (1.206)
Constant	13.08*** (5.964)	13.08*** (6.141)	12.96*** (6.054)
Year dummy (I.year)	YES	YES	YES
Observations	814	814	814
Number of id	138	138	138
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 #Model 1-Basic goods, Model 2- Capital goods, Model 3- Intermediate goods (Note:-1. Year dummies have been taken into model as a control variable for trend.			

In Table 6.17 the import value from unnamed countries of Basic goods, Capital goods and Intermediate goods are taken as dependent variable in the respective model. Dummies, *d1_ini*, *d1_aduty*, *d2_aduty*, *d3_aduty* and *d4_aduty* have been incorporated to control the initiation and imposition effect of the whole model. The imposition dummies for basic goods *d1_aduty_bas*, *d2_aduty_bas*, *d3_aduty_bas* and *d4_aduty_bas* show negative coefficient indicating trade distortions after the duty

imposition. The trade effect in $d1_aduty_bas$ is significant at 1% level of significance and trade reduces by -29.46% after the imposition on basic goods. Similarly the coefficients of the capital goods dummies have negative signs but not significant duty imposition effects are seen. There are heavy initiation effects and the import value of capital goods fall by 34.42 per cent. In the case of Intermediate goods all the dummies have positive signs and are statistically significant for two years after the imposition. In the initiation year import value increases by 43.47% indicating the positive trade effects and after duty imposition also trade value increases significantly in the first year by 26.99%. Thus, the trade effects of antidumping are not similar for all the commodity groups. There are trade distorting effects on the Basic and Capital goods but not in intermediate goods.

Results presented in Table 6.18 are regression results for import quantity of the basic, capital and intermediate goods. The dependent variable is import quantity of all these groups from the unnamed countries. The previous Table the import value of basic and capital goods have decreased and, therefore we can rule out the trade diversion effects in both the goods. But the import value of intermediate goods has increased significantly and therefore there is possibility of trade diversion. This can be further supported if we get the consistent results for the quantity models.

The results given in the following Table are interesting in this context. They are consistent with the earlier Table. The import quantity of basic and capital goods decreases after the imposition of the duty. But the import quantity of the intermediate goods is increasing significantly. This is a strong evidence of the trade diversion in intermediate goods. The import quantity of the intermediate goods increases by 47.84 per cent, 39.37 per cent, 65.36 per cent and 57.30 per cent during the four years respectively after duty imposition on the named countries. The trade diversion effects are even supported by the overall trend dummies. When all the trend dummies have negative signs in model 3, the signs of the after-duty dummies of intermediate goods are not just positive but significant too.

The results given in the Table 6.19 for unit value are consistent with the earlier result of the import quantity and import value models. The unit price of basic goods has fallen significantly but there are not significant post-duty effects on the unit value of capital goods and intermediate goods. But the signs of coefficients are negative and, therefore, very indicative in model 3.

Table 6.18 : Trade Effects on Basic, Capital and Intermediate Goods (Import Quantity)			
Variables	Basic	Capital	Intermediate
	Model 1	Model 2	Model 3
ln_unnamed_qty			
L.ln_unnamed_qty	0.180* (1.946)	0.169* (1.720)	0.169* (1.771)
L2.ln_unnamed_qty	-0.0706 (-1.500)	-0.0835* (-1.758)	-0.0807* (-1.705)
d1_ini	0.0750 (0.630)	0.0637 (0.598)	0.231 (1.451)
d1_aduty	0.126* (1.715)	0.105 (1.444)	-0.207* (-1.685)
d2_aduty	0.0793 (0.926)	0.0933 (1.011)	-0.192 (-1.364)
d3_aduty	0.0381 (0.327)	0.253** (2.065)	-0.260 (-1.341)
d4_aduty	0.0401 (0.352)	0.207 (1.623)	-0.247 (-1.217)
d1_ini_bas (Basic, Capital, Intermediate)#	0.0769 (0.402)	0.237 (0.785)	-0.191 (-1.080)
d1_aduty_bas (Basic, Capital, Intermediate)#	-0.356** (-2.183)	-0.200 (-1.112)	0.391** (2.551)
d2_aduty_bas (Basic, Capital, Intermediate)#	-0.172 (-0.758)	-0.246 (-1.358)	0.332** (2.029)
d3_aduty_bas (Basic, Capital, Intermediate)#	0.332 (1.419)	-0.853*** (-3.244)	0.503** (2.258)
d4_aduty_bas (Basic, Capital, Intermediate)#	0.347 (1.620)	-0.703*** (-2.701)	0.453** (2.122)
Constant	13.16*** (9.653)	13.28*** (9.135)	13.47*** (9.894)
Year dummy (I.year)	YES	YES	YES
Observations	785	785	785
Number of id	132	132	132
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 #Model 1-Basic goods, Model 2- Capital goods, Model 3- Intermediate goods (Note:-1.Year dummies have been taken into model as a control variable for trend.			

Table 6.19 : Trade Effects on Basic, Capital and Intermediate Goods (Unit Value)			
Variables	Basic	Capital	Intermediate
	Model 1	Model 2	Model 3
ln_unit_val			
L.ln_unit_val	0.0829 (1.235)	0.0966 (1.333)	0.0798 (1.140)
L2.ln_unit_val	0.0201 (0.297)	0.0305 (0.470)	0.0214 (0.317)
d1_ini	0.0593 (0.489)	0.00550 (0.0531)	-0.250* (-1.666)
d1_aduty	0.194*** (3.353)	0.155*** (2.718)	0.199** (1.995)
d2_aduty	0.195*** (2.945)	0.147* (1.917)	0.248** (1.973)
d3_aduty	0.423*** (5.092)	0.251** (2.556)	0.450*** (3.381)
d4_aduty	0.529*** (5.169)	0.297*** (2.591)	0.485*** (2.710)
d1_ini_bas (Basic, Capital, Intermediate)#	-0.364** (-2.298)	-0.235 (-1.039)	0.296* (1.851)
d1_aduty_bas (Basic, Capital, Intermediate)#	-0.0841 (-0.703)	0.0675 (0.380)	-0.0583 (-0.490)
d2_aduty_bas (Basic, Capital, Intermediate)#	-0.0821 (-0.468)	0.0703 (0.332)	-0.117 (-0.766)
d3_aduty_bas (Basic, Capital, Intermediate)#	-0.437*** (-2.879)	0.336 (1.356)	-0.167 (-0.997)
d4_aduty_bas (Basic, Capital, Intermediate)#	-0.958*** (-5.016)	0.366 (1.357)	-0.114 (-0.580)
Constant	1.432*** (5.784)	1.281*** (5.337)	1.395*** (3.678)
Year dummy (I.year)	YES	YES	YES
Observations	778	778	778
Number of id	132	132	132
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 #Model 1-Basic goods, Model 2- Capital goods, Model 3- Intermediate goods (Note:-1.Year dummies have been taken into model as a control variable for trend.)			

Thus, there are trade distorting effects on basic and capital goods from unnamed countries while trade in intermediate goods from unnamed countries increased significantly, which a clear evidence of the trade diversion from named to unnamed countries.

6.9 HS Code Based Classification (Base metals, Vehicles, Chemical products, Plastic and Rubber, Machinery, paper etc.)

This section deals with the trade effect on industries classified on the basis of HS codes. These are broad groups of commodities. Results of two individual commodities are presented in three columns model 1, model 2 and models 3 for import value, import quantity and unit value separately for five groups except the 'Minerals'. The group 'Minerals' has been dropped due to insignificant results and co-linearity among the dummies.

The previous section shows that there are trade distorting effects on basic and capital goods from unnamed countries while trade in intermediate goods from unnamed countries increases very significantly, this is a clear evidence of the trade diversion in intermediate goods from named to unnamed countries. This section analyzes the trade effects on the industries classified on the basis of HS codes and try to compare those results with the results of use-based industries.

Results for the base metal industry are provided in Table 6.20. Overall imports of the base metal goods from unnamed countries dropped considerably despite fall in unit prices. After imposition of the duty on imports from the named countries the unit prices of imports from unnamed countries have fell. At the same time import quantity and import value fell. So there is no trade diversion in base metal goods.

Results presented in Table 6.21 for the machinery goods show that the unit prices initially dropped during the initiation and later it increased. As a results the import quantity of the machinery goods fell in the second, third and fourth year by 27.60, 63.75 and 55.75 per cent respectively. So the import value dropped significantly. Thus there is no trade diversion in the machinery goods from unnamed countries.

Table 6.20 : Trade Effects on Base Metals Industry			
Variables	Value	Quantity	Unit Value
	Model 1	Model 2	Model 3
ln_unnamed_val			
L.ln_unnamed_val	0.169** (2.032)	0.196*** (3.066)	-0.133 (-1.434)
L2.ln_unnamed_val	-0.280*** (-3.917)	-0.339*** (-2.628)	-0.604*** (-6.586)
d1_ini_basemetals	-0.802** (-2.143)	-0.0355 (-0.102)	-0.533** (-2.526)
d1_aduty_basemetals	-0.711* (-1.822)	-0.237 (-0.563)	-0.311 (-1.623)
d2_aduty_basemetals	-1.234* (-1.717)	-0.242 (-0.268)	-0.553 (-1.265)
d3_aduty_basemetals	-1.451 (-1.429)	0.0592 (0.0497)	-0.814 (-1.297)
d4_aduty_basemetals	-2.306* (-1.727)	-0.0717 (-0.0479)	-1.228 (-1.541)
Constant	15.70*** (6.199)	18.65*** (8.057)	0.783 (1.220)
Year dummy (I.year)	YES	YES	YES
Observations	814	785	778
Number of id	138	132	132
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 (Note:-1.Year dummies have been taken into model as a control variable for trend.)			

Table 6.21 : Trade Effects on Machinery Industry			
Variables	Value	Quantity	Unit Value
	Model 1	Model 2	Model 3
ln_unnamed_val			
L.ln_unnamed_val	0.154	0.175*	0.0989
	(1.511)	(1.749)	(1.351)
L2.ln_unnamed_val	0.0164	-0.0794*	0.0318
	(0.158)	(-1.668)	(0.492)
d1_ini	0.0176	0.0639	0.00962
	(0.218)	(0.607)	(0.0937)
d1_aduty	0.192***	0.105	0.154***
	(3.116)	(1.488)	(2.735)
d2_aduty	0.0998	0.0979	0.142*
	(0.986)	(1.093)	(1.878)
d3_aduty	0.293**	0.259**	0.238**
	(2.152)	(2.167)	(2.451)
d4_aduty	0.291**	0.206*	0.294**
	(1.985)	(1.674)	(2.570)
d1_ini_machines	-0.431*	0.292	-0.263
	(-1.895)	(0.869)	(-1.056)
d1_aduty_machines	-0.0342	-0.238	0.105
	(-0.240)	(-1.202)	(0.550)
d2_aduty_machines	-0.0173	-0.323*	0.129
	(-0.123)	(-1.682)	(0.560)
d3_aduty_machines	-0.275	-1.015***	0.465*
	(-1.608)	(-3.811)	(1.815)
d4_aduty_machines	-0.194	-0.815***	0.456
	(-1.059)	(-3.169)	(1.560)
Constant	13.07***	13.13***	1.367***
	(6.032)	(8.728)	(3.683)
Year dummy (I.year)	YES	YES	YES
Observations	814	785	778
Number of id	138	132	132
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 Note:-Year dummies have been taken into model as a control variable for trend.			

Results of vehicle goods shown in Table 6.22 are different from the previous results. Unit prices of the vehicles dropped considerable during the initiation and duty imposition but the fall after the duty imposition was significant during the second, third and fourth years. The unit prices dropped by 32.90, 53.79 and 45.11 per cent respectively in those years. Consequently import quantity increased significantly by 43.61, 80.21, and 55.58 per cent respectively. This is a clear evidence of the trade diversion in the vehicles from unnamed countries.

Table 6.22 : Trade Effects on Vehicles Industry			
Variables	Value	Quantity	Unit Value
	Model 1	Model 2	Model 3
ln_unnamed_val			
L.ln_unnamed_val	0.137 (1.367)	0.180* (1.877)	0.1000 (1.448)
L2.ln_unnamed_val	0.0315 (0.310)	-0.0760 (-1.580)	0.0320 (0.489)
d1_ini	-0.00778 (-0.0945)	0.100 (0.947)	-0.0191 (-0.174)
d1_aduty	0.217*** (3.537)	0.0692 (0.991)	0.182*** (3.440)
d2_aduty	0.132 (1.336)	0.0385 (0.457)	0.197*** (3.174)
d3_aduty	0.294** (2.229)	0.0745 (0.659)	0.385*** (5.178)
d4_aduty	0.323** (2.278)	0.0598 (0.509)	0.460*** (4.644)
d1_ini_vehicles	-0.400* (-1.690)	-0.273 (-1.044)	-0.0700 (-0.250)
d1_aduty_vehicles	-0.351** (-2.211)	0.0330 (0.161)	-0.159 (-1.388)
d2_aduty_vehicles	-0.0978 (-0.639)	0.362** (2.243)	-0.399*** (-3.176)
d3_aduty_vehicles	-0.113 (-0.477)	0.589* (1.959)	-0.772*** (-3.339)
d4_aduty_vehicles	-0.0335 (-0.109)	0.442* (1.818)	-0.600** (-2.301)
Constant	13.18*** (6.070)	13.26*** (9.241)	1.309*** (5.293)
Year dummy (I.year)	YES	YES	YES
Observations	814	785	778
Number of id	138	132	132
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 Note:-Year dummies have been taken into model as a control variable for trend.			

Results presented in the Table 6.23 are that, though the import value seems to be negative in one year, we cannot rule out the possibility of trade diversion. The unit prices have negative signs throughout the five years and the import quantities have positive signs with statistical significance in the third year. This leaves a room for the possibility of trade diversion in chemicals and plastic goods from named to unnamed countries.

Table 6.23 : Trade Effects on Chemicals and Plastic Industry			
Variables	Value	Quantity	Unit Value
	Model 1	Model 2	Model 3
ln_unnamed_val			
L.ln_unnamed_val	0.133 (1.310)	0.173* (1.747)	0.0931 (1.319)
L2.ln_unnamed_val	0.00551 (0.0541)	-0.0832* (-1.818)	0.0267 (0.397)
d1_ini	-0.318*** (-2.858)	0.00866 (0.0656)	-0.125 (-1.044)
d1_aduty	0.122 (1.487)	-0.0496 (-0.483)	0.179** (2.253)
d2_aduty	0.126 (0.945)	-0.0198 (-0.158)	0.204** (2.007)
d3_aduty	0.218 (1.345)	-0.159 (-0.921)	0.448*** (3.849)
d4_aduty	0.189 (1.143)	-0.102 (-0.536)	0.462*** (2.833)
d1_ini_chem_plast	0.516*** (3.548)	0.144 (0.849)	0.167 (1.149)
d1_aduty_chem_plast	0.105 (0.994)	0.178 (1.228)	-0.0151 (-0.144)
d2_aduty_chem_plast	-0.0459 (-0.300)	0.0794 (0.528)	-0.0362 (-0.278)
d3_aduty_chem_plast	0.0702 (0.415)	0.383* (1.938)	-0.147 (-0.976)
d4_aduty_chem_plast	0.131 (0.780)	0.233 (1.181)	-0.0403 (-0.220)
Constant	13.61*** (6.240)	13.21*** (9.204)	1.314*** (5.425)
Year dummy (I.year)	YES	YES	YES
Observations	814	785	778
Number of id	138	132	132
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 Note:-Year dummies have been taken into model as a control variable for trend.			

Results of the trade effects on the textiles and paper goods presented in Table 6.24. Unit prices of imports of these products are increased during investigation period but subsequently after the imposition of duty on the import from the named countries, the unit prices of imports from the unnamed countries fall significantly. The import unit price increased by 30.73 per cent during the initiations but later it tumbled by 24 per cent in the second year after the duty imposition. The import quantity increased throughout the five years. It increased by 54 per cent during the investigation itself

and later in the first, second and fourth years after imposition by 68.20, 135 and 158 per cent respectively. This is the highest rise in the import quantity in all the goods in our sample. So there is a strong evidence of trade diversion in the textiles and paper commodities.

Table 6.24 : Trade Effects on Textiles and Paper Industry			
Variables	Value	Quantity	Unit Value
	Model 1	Model 2	Model 3
L.ln_unnamed_val	0.121 (1.115)	0.163 (1.625)	0.0965 (1.398)
L2.ln_unnamed_val	0.0103 (0.102)	-0.0816* (-1.712)	0.0333 (0.509)
d1_ini	0.0531 (0.632)	0.169 (1.538)	-0.0440 (-0.389)
d1_aduty	0.181*** (2.736)	0.0380 (0.529)	0.179*** (3.245)
d2_aduty	0.107 (1.191)	0.00375 (0.0461)	0.200*** (3.115)
d3_aduty	0.292** (2.414)	0.0752 (0.680)	0.360*** (4.680)
d4_aduty	0.322** (2.320)	0.0332 (0.287)	0.451*** (4.422)
d1_ini_text_papers	-0.594** (-2.259)	-0.779*** (-2.875)	0.268** (2.040)
d1_aduty_text_papers	0.479* (1.707)	0.520* (1.932)	-0.00841 (-0.0838)
d2_aduty_text_papers	0.542 (0.977)	0.853** (2.376)	-0.273* (-1.842)
d3_aduty_text_papers	0.366 (0.578)	0.458 (1.120)	-0.00961 (-0.0513)
d4_aduty_text_papers	0.489 (0.917)	0.949** (2.406)	-0.225 (-1.449)
Constant	13.79*** (6.196)	13.60*** (9.079)	1.316*** (5.351)
Year dummy (I.year)	YES	YES	YES
Observations	814	785	778
Number of id	138	132	132
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 Note:-1. Year dummies have been taken into model as a control variable for trend.			

6.10 Summery

This chapter dealt with the disaggregated effects. The overall trade has been disaggregated into named and unnamed countries trade. To do this we have compiled data for the imports of the subject commodities from the subject country, i.e., named countries. To get unnamed countries, the named countries imports have

been subtracted from total import (import from the whole world). So now we have data for import from the countries named in the petition and from countries exporting similar goods to India but not named in it. Now this helps to check the possibility of trade diversion. Theoretically, if the trade from named countries fall and the trade from the unnamed countries in the same commodities increases, then there are chances of trade diversion. But a mere fall in the trade from named countries proves trade destruction and not trade diversion. It can be proved only when there is a sudden increase in the imports of the subject commodities.

The dummies $d1_aduty$, $d3_aduty$ and $d4_aduty$ are significant at 5% level of significance and the imposition of antidumping duties then import value rises by 37.30%, 69.72% and 96.40% in first, third and fourth year after the imposition, respectively. The coefficients of remaining dummies d_ini , $d1_ini$, $d2_aduty$ are not significant but their signs are positive. In the quantity model import quantity (natural log) taken as a dependent variable and import quantity is also positive but it's not significant.

Theoretically, both the import value and volume should fall after the antidumping initiations and duty imposition but our results are contradictory to the theory. This has happened due to the positive price effects and probably because of the inelastic demand for imports. It has kept import quantity unaltered but conversely the import value has gone up due to higher unit price. It means that the Indian Antidumping policy is ineffective and failed to give contingent protection to the domestic industries during 2003-2012.

In the unit price model, unit price (natural log) is taken as dependent variable. In the Initial two years price did not change significantly but signs are still negative. After the imposition of duty prices it increased significantly. So we can say that the Indian AD policy has been effective to provide price protection to the domestic industries.

I have analyzed the AD imposition effects and duty effect by disaggregating them. In the value model imposition effect and duty effect i.e. $d1_aduty$, $d3_aduty$ and $d4_aduty$ are statistically significant and coefficients are positive. Duty effect is shown by $adduty_d1a_imp$, $adduty_d2a_imp$, $adduty_d3a_imp$ and $adduty_d4a_imp$. Besedes and Prusa (2016) found that AD action increases hazard in every stage, but the smallest effect is during the final AD stages duty phase and larger effects during the initiation and preliminary phases. Our result go with it as

duty year dummies show the lesser effect as depicted by their coefficients. But in price model the unit price marginally increased in the second, third and fourth year after imposition due to duty effect.

The imported goods are classified on the basis of its use by HS code into four categories namely Basic goods, Consumer goods, Capital goods and Intermediate goods⁶. But there is only observation in the consumer goods category and hence we have dropped it from the analysis. For the simplicity of analysis of trade effects on import value, import quantity and unit value of all these three categories are analyzed separately for each dependent variable. First, the regression analysis has been carried out by taking import value (natural log) of basic, capital and intermediate goods respectively. In given model I have used *d1_ini*, *d1_aduty*, *d2_aduty*, *d3_aduty* and *d4_aduty* to control the effects due to initiation and imposition effect of the whole model. In this model imposition dummies for basic goods like *d1_aduty_bas*, *d2_aduty_bas*, *d3_aduty_bas* and *d4_aduty_bas* have negative coefficients but all are not statistically significant. After the imposition in the second year the import value fell by 41.60% in the second year after the imposition of duty. The coefficients of dummies for capital goods have positive signs but all they are statistically insignificant. Coefficients of *d1_aduty_intermediate* and *d2_aduty_intermediate* show negative sign but not significant. In a nutshell, the basic goods are more affected after the imposition of duty and Import value of intermediate goods fell for two years after imposition marginally. For capital goods there is no significant change and coefficients are positive second set of analysis is carried out with unit value as a dependent variable for named countries of Basic goods, Capital goods and Intermediate goods are taken as dependent variable in the respective model. Dummies *d1_ini*, *d1_aduty*, *d2_aduty*, *d3_aduty* and *d4_aduty* to control the effects due to initiation and imposition effect of the whole model. Here in this model *d1_ini_capital*, *d1_aduty_capital* and *d4_aduty_capital* show significant decrease, increase and increase respectively. In the initiation year capital goods price reduced by 34.81% and increased in the first year and fourth year of imposition by 60.31% and 46.22%. For intermediate goods it increased by 32.18% in the initiation year and reduced by 23.5% in the fourth year of imposition. But there is no significant decrease or increase in the unit price of the basic goods.

⁶ Ministry of Statistics and Programme Implementation.

For the sake of analyzing the unnamed countries trade effects India's import value (natural log) of dumped goods from the unnamed countries⁷ has been taken as a dependent variable. The dummies such as *d1_aduty*, *d2_aduty*, *d3_aduty* and *d4_aduty* are used to show the effect after the imposition, i.e., after initiation effects of the antidumping duties. Year dummies are used as a control variable.

The regression results are clear and show that due to fear factor (apprehension effect) of being the target of Indian AD authorities, price of imports from unnamed countries rose in the investigation period and subsequently by 19.96%, 21.4%, 45.79% and 58.24% respectively though there is no duty imposition involved. There is no effect on the quantity imported as it is not significant. So this combined effect resulting in import value as shown by the imposition dummies of value model. The import value rises by 23.98% in first year, 34.04% in third year and 38.81% in the fourth year. Since there is no evidence of increase in the import quantity, we have to accept the null hypothesis i.e. there is no trade diversion effect.

The regression results of imposition and duty effects on the value, quantity and unit value of unnamed countries are analyzed by segregating imposition and duty effect. In the unit value model *d1_aduty*, *d2_aduty*, *d3_aduty* and *d4_aduty* are statistically significant at 1% level of significance and coefficients of it are positive. Duty effect is shown by *adduty_d1a_imp*, *adduty_d2a_imp*, *adduty_d3a_imp* and *adduty_d4a_imp* is not statistically significant. The price effect can be further split into duty price effect and non-duty price effect; the duty price effect is not significant which is consistent with our hypothesis. But overall price effect is positive because of non-duty price effects. This may be due to the signals or threat of being the next target. Besedes and Prusa (2016) found that AD action increases hazard in every stage, but the smallest effect is during the final AD stages duty phase and larger effects during the initiation and preliminary phases. Our results are consistent with this observation as the duty dummies show lesser effect as depicted by their coefficients. But in price model the unit price marginally increased in the second, third and fourth year after imposition due to duty effect.

The import value of Basic goods, Capital goods and Intermediate goods from unnamed countries are taken as dependent variable in the present model. Dummies, *d1_ini*, *d1_aduty*, *d2_aduty*, *d3_aduty* and *d4_aduty* are taken to control the

⁷ Unnamed countries are those countries which were not named in the Antidumping Initiations by the Indian authority

initiation and imposition effect of the model. The imposition dummies for basic goods like *d1_aduty_bas*, *d2_aduty_bas*, *d3_aduty_bas* and *d4_aduty_bas* show negative coefficient. Even *d1_aduty_bas* is significant at 1% level of significance and trade reduced by -29.46% after the imposition on basic goods. Coefficients of capital goods dummies have negative sign but are insignificant. But for Intermediate goods the dummies are positive and statistically significant for the two years after the imposition. Import value increased by 43.47% and 26.99% which is contradictory.

Thus there are trade distorting effects on basic and capital goods from unnamed countries but the trade in intermediate goods from unnamed countries increases very significantly, this is a clear evidence of the trade diversion from named to unnamed countries.

The analysis of the trade effects on the industries classified on the basis of HS codes reveals that the trade in base metals and machineries fell significantly. But the trade in chemical goods, textiles goods and paper goods has gone up significantly. Thus, there is strong evidence of the trade diversion in chemical and textiles-paper industries from named countries to unnamed countries.

Chapter - VII

Conclusion and Recommendations

7.1 Conclusion

Dumping and antidumping have been a part of political economy for a long time. Jacob Viner (1923) was the first scholar to organize the earlier writings on this issue. Though researcher found many instances of dumping in history, anti-dumping laws were developed in the early part of the twentieth century. The first antidumping law was adopted by Canada in 1904. In 1905 the New Zealand government also introduced it. New Zealand and UK manufacturers of farm implements complained that a U.S. trust was attempting to monopolize the New Zealand market by price cutting (Viner 1923). Within a few years laws were passed in Australia, South Africa and Newfoundland. After some time the British government passed an antidumping law in 1921. It was even more complicated than the unworkable Australian regulation of 1906. Action against imports would come only after nine steps had been taken. The US government also passed a similar law in 1921 to protect its domestic producers from German dumping.

In the same year, Australia, New Zealand, and Canada also passed new antidumping laws or made significant amendments in old ones. After various countries individually adopted legislation on antidumping, multilateral initiatives were taken and a collective agreement was finally achieved through GATT after 1947. Though the GATT came into force in 1948, the contracting parties (as GATT member countries) did not canvass themselves about the use of antidumping until 1958. The resulting tally showed a total of 37 antidumping decrees in force across all GATT member countries as in May 1958. Out of them 22 were alone in South Africa (GATT 1958, 14). Antidumping first became a significant GATT issue at the Kennedy Round of 1964-67. Its result was the agreement on the implementation of article VI (the antidumping code) which laid detailed criteria and procedures for the invocation of antidumping actions. The main revisions to the 1967 code related to causality and injury determination, which were addressed in 1979 in Tokyo Round. It allowed for "normal value" (the generic term in the GATT for home-market price) to be determined on some basis other than market price in the exporting country when there are no sales of like products in the ordinary course of trade. But the

1979 code contained many ambiguities and led to inconsistent antidumping practices and procedures. Therefore, the antidumping code further needed revision. It received attention in the Uruguay Round. Doha Round-2002 is still on. The post-Tokyo Round witnessed a relative decline in VERs due to a tremendous rise in the use of ‘GATT-consistent’ contingent protection measures. It was primarily because of antidumping measures that surged sharply that the use of safeguard measures did not change noticeably (Aggarwal 2003). A study by National Board of Trade, Sweden (2004) shows that EC and US had been the largest users of grey-area measures until 1970s. They became the largest antidumping users since 1980. Grey area measures were replaced by the use of antidumping measures and which became highly popular measure followed by countervailing measures. Safeguard measure on the other hand were used rarely.

Chapter -III:

The surge of contingent protection measures is also attributed to the tariff reduction which was an important issue during the process of multilateral trade negotiations which have forced WTO members to reduce the tariff and other quantitative restrictions on trade. The average applied tariffs declined from 35% in 1995 to 3% in 2013. The uses of contingent protection such as countervailing duty, antidumping duty and safeguard measures have amplified dramatically after 1995. The initiations of contingent protection in four years increased significantly from 169 in 1995 to 415 in 1999. Out of total contingent measures initiations, antidumping initiations account for 86% and countervailing duty and safeguards both together contribute only 14%. In total 4757 AD initiations have been filed till the end of 2014.

While WTO member countries pursued different liberalization routes to reduce and sustain lower applied tariffs in this period many countries increasingly adopted ‘contingent’ or ‘administered’ import protection under policies such as antidumping, safeguards and countervailing duties – what Chad P. Bown (2011) has termed as temporary trade barrier (TTB) policies. The combined result of these two phenomena is a new framework for the international trading system. Exporters are simultaneously subject to low (on an average) applied import tariffs. But they also face the threat of frequently changing TTBs. Bown (2011) provides facts on the cross-country use of TTB policies

over 1990–2009 by taking stock of newly available product-level data organized into the World Bank’s Temporary Trade Barriers Database (Bown, 2010a). His first estimates compare developed versus developing economies use of TTBs and show how such policies are likely to have heterogeneous economic impact on their trade flows. Most striking is how the divergence between these two groups of economies has taken place over time. Even before the global economic shock of 2008–09, the annual stock of imported products subject to such trade barriers imposed by major emerging economies had grown substantially from a starting point in the mid-to-late 1990s at or close to zero to coverage of up to 4 per cent of each economy’s imported products by 2007. On the other hand, developed economies with a longer history of using such policies have experienced a declining share of their imports subject to such policies over time. One of his measures indicates that while 3.5–5 per cent of these economies’ imports may have been affected during 1997–2005, TTB policy coverage had fallen by roughly 50 per cent to only 1.5–3 per cent of their annual imports by 2007.

The major G20 users have contributed more to increase the stock of product lines subject to TTBs by 25 per cent during the crisis period. G20 economies increased the stock of products covered by TTBs roughly from 1.7 percent in 2007 to 2.15 percent in 2012. But developing economies increased their stock of product coverage by TTBs during the crisis by 40 per cent, though there is substantial heterogeneity within the set of developing economies (Bown 2011). G20 emerging economies increased their stock of import product line substantially from 1995 to 2013, i.e., from 0.5 percent to 3 percent. It rose sharply during crisis period.

The analysis of trends and patterns in the AD initiations by the importers, i.e., the users of the antidumping measures, reveals many interesting patterns. Since there are many countries involved in it, for the sake of simplicity, researcher has analysed it for top ten users whose share is around 75 per cent. This analysis is carried out in three sub sections, i.e., region-wise (country groups), country-wise and sector-wise.

While the AD actions were mainly used by developed nations in 1970s - 1980s, they are increasingly used by developing countries in the recent years. Dale (1980) has done a study of anti-dumping in the 1970s. Relying on GATT reports, Dale reported that the

four main actors the U.S., EU, UK and Canada had initiated 481 anti-dumping actions between 1968 and 1978. Australia opened 100 investigations between 1975-76 and 1977-78.

AD investigations initiated by emerging economies were less in early 1990s, whereas developed countries were using it heavily. Emerging economies have overtaken the developed countries after 1996. The picture after 1996 is completely opposite to the picture before it. Out of the total initiations during 1990 to 1994, 69 per cent were initiated by developed countries and merely 31 per cent by emerging countries. Except in 1993 emerging countries' initiations were far less than their counterparts till 1995. But in 1996 emerging countries took the lead in initiating antidumping investigations. Out of 4757 initiations from 1995 to 2014, 2875 were initiated by developing countries which amount 60.5 per cent and 1882 were initiated by developed countries which are around 39.5 per cent.

Country group-wise analysis can better be understood by disaggregating it to the country level and try to go to the source of problem. Researcher has limited this country wise analysis to top ten user countries of the world, namely, US, EU, Brazil, Argentina, Australia, South Africa, China, Canada and Turkey in the descending order. Though India joined the club of AD users in 1992 and effectively in 1995, she has used the AD policy heavily and has become a top user with around 16 per cent share in total initiations.

The initiations of anti-dumping investigations by importing members during 1995-2014 have been analyzed. Altogether top 10 countries account for 75 per cent of all initiations in this period. Six are developing countries. In terms of percentages, developing countries within the top 10 account for 43 per cent of all initiations. India has been the most active user with 740 initiations, i.e., approximately 16 per cent of all initiations, followed by the US and the EC. The other active users among developing countries are Argentina, Brazil and South Africa, accounting for 7.6, 6.64 and 6 per cent respectively China and Turkey accounting for 5.5 and 4 per cent approximately. Thus, developing country members of the WTO have taken the lead with respect to initiating anti-dumping investigations after the inception of WTO.

During the period 1990-94 a total 1251 cases were initiated by all the AD users out of which top five countries (Australia, US, EU, Mexico and Canada) initiated 75 per cent of the AD cases. If researcher consider top ten countries it goes up to 92 per cent. Surprisingly, India, South Korea, South Africa and Thailand do not find a place in them. The share of top five countries has come down in 1995-2014 to nearly 32 per cent. This has not happened because the traditional users have reduced their use of AD measures but the use by new users has increased significantly. So the composition of the most active users has changed histrionically over a period of time. There were five developing countries in the list of top ten countries during 1990-94, whereas there are now six of them in the top ten in 1995-2012. The sixth developing country is India which was not a part of top ten clubs earlier. Furthermore, the weight of developing countries in the overall initiation figures in the top ten has changed significantly. Developing countries accounted for only 25 per cent of all initiations during 1990-1994, whereas their share increased to 58 per cent during 1995-2014 out of which 43 per cent is contributed by top six developing countries and rest 15 per cent by all other developing countries.

There are often interesting points too especially about the developing world. Undoubtedly, India deserves mention with top priority in this regard. It did not initiate any investigation in 1990, 1991 and 1993. It initiated eight investigations in 1992 and seven in 1994, bringing its total initiations to 15 during 1990-1994, which stands at 1 per cent of all initiations. Still it evolved as a top user of AD measures during 1995-2014 with nearly 16 per cent of the total initiations. However, South Africa increased its share in initiations from 1 per cent in 1990-1994 to 4.81 per cent in 1995-2014. The shares of US and EU were 21 and 15 per cent respectively during 1990-94 which came down to 11 and 10 per cent respectively. The share of Argentina increased from 4.8 to 6.7 per cent and of the Brazil from 4 to 7.76 per cent.

One last category of developing countries were completely out of the picture during 1990-1994, but subsequently became relatively active. The first is China. Although it did not show up at all in the list for the period 1990-1994, it became number eight active user with respect to initiations during 1995-2012. Others countries such as Indonesia, Malaysia and Egypt, now accounting for nearly 2 per cent of all initiations

All the cases initiated till 1985 were initiated by OECD countries (Australia, Canada, EU and United States). After that Mexico joined the antidumping club as a major user. Other Latin American countries (Argentina, Brazil, Columbia followed it in the early 1990s. Lower middle and lower income countries such as South Africa, Egypt, Peru, Philippines and India started using antidumping by the late 1990s significantly.

Only four countries reported antidumping initiations in 1980 which increased to ten in 1990s. Till 2000 forty one countries reported initiations out of which six were OECD and five non-OECD developed countries, while the rest were developing countries. By 2010 the number of AD users increased to 48. But surprisingly there was no change in the number of traditional users and seven more developing countries started new investigations.

The distribution of antidumping user countries has been highly skewed. Only twelve countries use it actively. They account almost 80 per cent of the total initiations during 1995-2014. Four traditional users of antidumping (Australia, Canada, EU and United States) which accounted for 64 per cent during 1990-1995, still account for 31 per cent of total initiations. They account for almost 90 per cent of the total initiations by OECD countries during 1995-2014.

Traditional users are Australia, US, EU, New Zealand and Canada and they are OECD countries. New user are Argentina, Brazil, China, India, Mexico and South Africa which are mostly emerging (lower-middle and lower income) economies. Other countries which are not mentioned here are Thailand, Malaysia, Turkey, and Indonesia. Although the traditional users' share in total initiations has come down to 32 per cent, it is still high because these are only five countries which contribute one-third of initiations out of 48 countries. That means the remaining 43 countries together contribute 68 per cent initiations. Among 62 per cent new users, top six countries mentioned in the table contribute 2001 initiations out of 3220 initiations. They initiated 42 per cent of the total world initiations.

Thus, the surge in antidumping cases was fuelled by the developing countries in the late 1990s but the use of antidumping mechanism was still not widespread among them (Aggarwal 2003). According to an estimate (Zanardi 2004), around 40 developing countries have not initiated an investigation even if they have AD law. Vermulst (2005)

notes that complex methodology related to the calculation of dumping and injury margins, as well as the detailed procedural compliance that the authorities need before taking an antidumping action make the use of AD laws difficult to apply and understand in practice.

Now researchers deal with sectors-wise analysis of antidumping initiations by major users. It is based on the Harmonized System (HS) codes used internationally. As per it there are 21 chapters classified/ grouped by HS codes. Just to identify most frequently named sectors, researcher has selected only top ten sectors for the analysis.

It is evident that the highest numbers of cases have been initiated in the sector of base metals and articles thereof (XV). Out of total 4757 initiations 1379 cases have been initiated in which accounts for 29 per cent. The second most targeted sector is chemicals and allied industries, almost 20 per cent cases of total cases during 1995-2014 were initiated in it. Dumping cases tend to be concentrated in these sectors because the world markets for steel, base chemicals and plastics are highly cyclical and therefore at the bottom of a cycle, firms operating in these markets may turn to pricing sales below cost (Miranda et al. 1998). It is also possible that at the downturn, domestic firms in importing countries use antidumping law to protect themselves and since there is a very high probability of affirmative injury findings, they rush to file antidumping cases (Aggarwal 2003, p 144).

Researcher come that base metals and chemical industries are the most targeted sectors. India is a major player in filing the antidumping cases, followed by US and EU respectively. It filed 44% cases into the chemical industries whereas US filed 54% of its cases in base metals. When researcher further split the analysis researcher can infer that there is trend between developing and developed nations while filing the cases. Developing countries mostly file the cases into chemicals or allied industries (VI) and plastic and rubbers (VII), whereas developed nations file most cases in the steel industry (XV). Developing countries filed most cases in the Chemical Industries (VI) while Brazil and Turkey filed most cases in Plastic and Rubber (VII). Developed countries like US, EU, Australia and Canada filed cases mostly in Steel Industry (XV).

Researcher has analysed data pertaining to impositions of definitive measures in the period 1995-2012 and then compared them with the data for 1990-1994. Table 11

contains data regarding definitive measures imposed in 1995-2012. It shows that the top 15 most active users of anti-dumping measures in this period accounted for 88 per cent of all impositions. The six developing countries in the top ten accounted for 48 per cent of all impositions. That is, developing countries' share has been considerably larger than that of developed countries. Table 12 indicates that during 1990-1994, top ten active users of anti-dumping measures accounted for 97 per cent of all impositions. Five of them were developing countries which altogether accounted for only 18 per cent of all impositions.

On the basis of these data, research finds that the impositions of definitive anti-dumping measures are similar to initiations. Firstly, the number of users of anti-dumping measures went up significantly after inception of the WTO, compared with the period 1990-1994. The share of the ten most active users declined to 76 per cent in 1995-2012 from 97 per cent in 1990-1994. Secondly, the composition of active users also changed. The number of developing countries among top ten has increased from five to six. Even in the case of impositions, the share of developing countries in total impositions has risen significantly: developing countries accounted for 49 per cent of all impositions during 1995-2012 whereas they only accounted for 18 per cent during 1990-1994. The data on the imposition of definitive anti-dumping measures reveals that in the initiation of investigations, developing countries emerged as the main users in the post-WTO period.

Similarly, in sector-wise analysis of anti-dumping measures, most of the cases filed in the textiles (XI), Plastics and rubber(VII), Chemical and allied industries (VI), Textiles (XI) and machinery (XVI). Total number of cases filed in these top five sectors contributed around 85% to the top 10 sectors. In Base metal sector (XV) 32% of the cases filed were out of top 10 sectors. The sectoral anti-dumping measures in 1990-1994 shows trends between the sectors. Only the percentage of filing in the top five sectors increased marginally due to introduction of the WTO in 1995. Most of the cases filed in top 10 sectors were in 2000, 2002 and 2003.

After the emergence of WTO in 1995, China remains on the radar of reporting countries in the imposition of dumping duties. Around 25% of duties were imposed only on China from 1995 to 2014. This shows the aggressive policies implemented by Chinese Government during to increase export by killing the domestic industry of the reporting countries. Most of the dumping duties were imposed during 2000, 2002 and 2003.

Chapter -IV:

The basic purpose of the anti-dumping measures was to provide contingent protection to the domestic producers of member countries, facing problem of material injury caused by dumping by exporting country. But, the use of anti-dumping measures seems to be more protectionists and less of contingent nature. Many researchers have observed that (a) antidumping investigations are biased towards domestic petitioners, and (b) The investigations are carried out in such a manner that the probability of outcome is in favor of domestic petitioners is high.

This fact is corroborated by the evidence gathered from the WTO DSB decisions and the appellate body rulings. Several incompatibilities have been observed in the AD applications by the domestic investigating authorities. Some provisions/clauses of some member countries' legislations, prima facie, are not compatible with the WTO antidumping legal settings. The dispute arises when a member government believes another member is violating the WTO agreement. The complainant member country submits a 'request for consultation' at DSB after the identification of the agreement it believes is violated.

There have been till now 113 such requests for the consultation at DSB of WTO which cite Agreement on Antidumping. Out of them, 40 are still in consultation stage and 14 have been settled or terminated. Reports have been adopted by the respondents in 18 cases and in 20 cases implementation has been notified by the respondents. Twelve cases are still in the preliminary stage for which panels have not yet composed or panel just composed.

Out of 113 cases, in 50 cases US alone is the respondent followed by EU (13) and China (08). There are only four cases against India. In almost, 50 percent cases US has allegedly done violations. In most of the cases complainants are developing countries.

The article-level analysis reveals that mostly Art. 1, Art. 2, Art. 3, Art. 5, Art. 6, Art. 9 and Art.12 are cited. Article 2.4 of ADA is allegedly most violated followed by Article 5, Article 3 and 6 and therefore they have been bone of contention between the complainants and respondents. Higher incidences of DSB cases concentrated around

these articles indicate the potential mishandling of antidumping case on these grounds which, in fact, covers almost entire procedure.

The analysis of cases where reports or preliminary findings are available reveals many lapses and gaps in the use of AD measures and investigation procedure. In many cases DSB panel has expressed grave concerns about the intention of investigating authorities. The conduct of the investigation process itself is designed in such a way that the outcome of it would be favoring the domestic industry.

As far as the compatibility of domestic legislation with the WTO antidumping law is concerned, there are many clauses/provisions added to domestic legislation by some countries which are incompatible with the original WTO law. The clause of 'public interest' in the EU legislation is not consistent with ADA. Similarly, the practice of 'zeroing' the negative dumping margins being practised very frequently by US as well as EU and has been the most disputed at DSB by the developing countries against the practising countries. This practice is a proof of intentions of the practising countries. Though US argued that it is consistent with ADA, it is, it's a violation. The ambiguity in the ADA and the limited powers of DSB are the root causes of this issue.

Chapter -V:

Chapter five analyzes the signaling effects, initiation effects and imposition effects and duty effects broadly termed as trade destruction effects of Indian AD policy. The first part deals with overall trade effects, where researcher tried analyze the trade destruction effects on India's total imports of the named commodities. So it is total imports of the named commodities in the given period i.e. named and non-named together and not just named countries alone. The trade destruction effects are further classified into industry specific effects both use based and HS base classification and then region specific, i.e., emerging and developed counties.

The results presented are basically three different regressions which run separately. Since the basic structure of the model is the same, they are presented in one table. The dependent variables are India's total imports in subject commodities from the world in value and quantity and its unit value. So all the three effects are analyzed through the

import value, import quantity and unit price. The unit price is obtained by dividing import quantity by the import value.

The results presented in this chapter are not consistent with the earlier studies. They are contrary to what Prusa, Ganguli, Aggarwal and others have found. They have found that the AD investigation initiations reduce import value significantly during all the stages, i.e., pre-initiations, during investigations and after final duty imposition. But what appears from the results is that there are significant signaling and initiation effects in the first year of initiation. But after the second year of initiation, i.e., after the duty imposition, trade value increased significantly that is because there is no significant change in the quantity imported but the unit price has shown significant increase. Theoretically, the trade value falls because the unit prices tend to go up after the imposition of duty and thereby reduce the quantity imported. But it depends on the elasticity of imports.

Results of the duty effect model are consistent with the results of erstwhile model which measured the only duty imposition effect. But this model allows us to measure the actual duty effect. To capture the specific effects researcher has used interaction dummies where researcher has interacted dummies and researcher has interacted earlier after initiation dummies by the actual dumping duty.

At the same time researcher has kept earlier after initiation dummies to control the initiation effect. Thus this model precisely gives us actual duty effects. The duty effects in model 3 are very significant. The unit price shows a significant rise during all the four years after the imposition of duties. Due to the rise in unit prices the quantity of imports has decreased in first two years (negative signs) but surprisingly it increased in third and fourth year. That simply means that even after the imposition of duty, the quantity imported has not changed significantly. But an increase in unit price has led to increased import value. Therefore, it appears to be inconsistent with earlier studies due to the inelastic demand for imports.

As far as the duty effects on total import value are concerned, it is the function of unit prices and import quantity. Therefore, it has decreased along with quantity in first year of duty imposition. But it shows significant increasing trends in subsequent years.

The previous research analyzing the effects of antidumping duties on international trade has not focused on their industry specific effects. All the studies have demonstrated that antidumping duty protection has significant trade depressing and trade diverting effects. Policy tools against antidumping are inherently discriminating in terms of both countries and industries. This is because antidumping duties are imposed on the imports of specific goods from targeted countries. Imports of the same good of non-targeted countries and imports of other products are not subject to such duty. In this regard, antidumping measures are understood as a policy tool to protect the targeted industries of the importing country rather than all industries in the country (Kang, Lee, Park 2012). The analysis of industry specific trade effects gives us more clarity and corroborates our earlier results.

Chapter -VI:

This present chapter deals with the disaggregated effects. The overall trade has been disaggregated into named and unnamed countries trade. To do this researcher has compiled data for the imports of the subject commodities from the subject country, i.e., named countries. To get unnamed countries, researcher has subtracted the named countries imports from total import (import from the whole world). So researcher has data for import from the countries named in the petition and from countries exporting similar goods to India but not named in it. This helps to check the possibility of trade diversion. Theoretically, if the trade from named countries falls and from the unnamed countries increases, there are chances of trade diversion. But a merely fall in trade from named countries proves trade destruction and not trade diversion. It can be proved only when there is a sudden increase in the imports of the subject commodities.

The dummies $d1_aduty$, $d3_aduty$ and $d4_aduty$ are significant at 5% level of significance and the imposition of antidumping duties then import value rises by 37.30%, 69.72% and 96.40% in first, third and fourth year after the imposition respectively. The coefficients of remaining dummies d_ini , $d1_ini$, $d2_aduty$ are not significant but their

signs are positive. In the quantity model also import quantity (natural log) taken as a dependent variable and import quantity are positive but not significant.

Theoretically, the import value and volume both should fall after the antidumping initiations and duty imposition. But our results are contradictory to the theory. This has happened due to the positive price effects probably because of the inelastic demand for imports. It has kept import quantity unaltered but conversely the import value has gone up due to higher unit price. It means the Indian Antidumping policy was ineffective and failed to give contingent protection to the domestic industries during 2003-2012.

In the unit price model, unit price (natural log) is taken as a dependent variable. In the initial two years price did not change significantly but signs are negative. After the imposition of duty prices are increased significantly. So researcher can say that the Indian AD policy has effectively provided price protection to the domestic industries.

Researcher has analyzed the AD imposition and duty effects by disaggregating them. In the value model imposition and duty effects, i.e., $d1_aduty$, $d3_aduty$ and $d4_aduty$ are statistically significant and coefficients have positive sign. Duty effect is shown by $adduty_d1a_imp$, $adduty_d2a_imp$, $adduty_d3a_imp$ and $adduty_d4a_imp$. Besedes and Prusa (2016) found that AD action increases hazard in every stage. The smallest effect is during the final AD stages duty phase and larger effects during the initiation and preliminary phases. Our result go with it, duty year dummies show the lesser effect as depicted by their coefficients. But in price model researcher can see that unit price marginally increased in second, third and fourth year after imposition due to duty effect.

The imported goods are classified on the basis of its use by HS code into four categories, namely, Basic goods, Consumer goods, Capital goods and Intermediate goods¹. But there is only one observation in the consumer goods category. Hence, researcher has dropped it from the analysis. So for the simplicity of the analysis of trade effects on import value, import quantity and unit value of all these three categories are analyzed separately for each dependent variable. First, the regression analysis has been carried out by taking

¹ Ministry of Statistics and Programme Implementation.

import value (natural log) of basic, capital and intermediate goods respectively. In given model researcher has used *d1_ini*, *d1_aduty*, *d2_aduty*, *d3_aduty* and *d4_aduty* to control the effects due to initiation and imposition effect of the whole model. In this model imposition dummies for basic goods like *d1_aduty_bas*, *d2_aduty_bas*, *d3_aduty_bas* and *d4_aduty_bas* have negative coefficients but all are not statistically significant. After the imposition in the second year the import value falls by 41.60% in the second year after the imposition of duty. The coefficients of dummies for capital goods have positive signs but all they are statistically insignificant. Coefficients of *d1_aduty_intermediate* and *d2_aduty_intermediate* show negative sign but are not significant. In a nutshell, the basic goods are more affected after the imposition of duty and import value of intermediate goods falls for two years after imposition marginally. For capital goods there is no significant change and coefficient is positive. The second set of analysis is carried out with unit value as a dependent variable for named countries of Basic goods, Capital goods and Intermediate goods in the respective models. Dummies *d1_ini*, *d1_aduty*, *d2_aduty*, *d3_aduty* and *d4_aduty* control the effects due to initiation and imposition effect of the whole model. In this model *d1_ini_capital*, *d1_aduty_capital* and *d4_aduty_capital* show significant decrease and increase respectively. In the initiation year capital goods price reduces by 34.81% and increases in the first year and fourth year of imposition by 60.31% and 46.22% respectively. For intermediate goods it increases by 32.18% in the initiation year and reduces by 23.5% in the fourth year of imposition. There is no significant decrease or increase in the unit price of the basic goods.

For the sake of analyzing the unnamed countries' trade effects, researcher has taken India's import value (natural log) of dumped goods from the unnamed countries² as a dependent variable. The dummies such as *d1_aduty*, *d2_aduty*, *d3_aduty* and *d4_aduty* are used to show the effect after the imposition i.e. after initiation effects of the antidumping duties. Year dummies are used as a control variable. The regression results are show that due to fear factor (apprehension effect) of being the target of Indian AD Authority, price of imports from unnamed countries rises in the investigation period subsequently as 19.96%, 21.4%, 45.79% and 58.24% respectively though there is no duty

² Unnamed countries are those countries which were not named in the Antidumping Initiations by the Indian authority

imposition involved. There is no effect on the quantity imported as it is not significant. This combined effect results in import value as shown by the imposition dummies of value model. Import value rises by 23.98% in first year, 34.04% in third year and 38.81% in the fourth year. Since there is no evidence of increase in the import quantity, researcher has to accept the null hypothesis, i.e., there is no trade diversion effect.

The regression results of imposition and duty effects on the value, quantity and unit value of unnamed countries are analyzed by segregating imposition and duty effect. In the unit value model *d1_aduty*, *d2_aduty*, *d3_aduty* and *d4_aduty* are statistically significant at 1% level of significance and its coefficients are positive. Duty effect is shown by *adduty_d1a_imp*, *adduty_d2a_imp*, *adduty_d3a_imp* and *adduty_d4a_imp* and is not statistically significant. The price effect can be further split into duty price and non-duty price effects. It is evident from the results that the duty price effect is not significant which is consistent with our hypothesis. But overall price effect is positive because of non-duty price effect. This may be due to the signals or threat of being the next target. Besedes and Prusa (2016) found that AD action increases hazard in every stage, but the smallest effect is during the final AD stages duty phase and larger effect during the initiation and preliminary phases. Our results are consistent with this observation. The duty dummies show lesser effect as depicted by their coefficients. But in price model researcher can see that unit price marginally increased in second, third and fourth year after imposition due to duty effect.

The import value of Basic goods, Capital goods and Intermediate goods from unnamed countries are taken as dependent variable in the present model. Dummies, *d1_ini*, *d1_aduty*, *d2_aduty*, *d3_aduty* and *d4_aduty* are taken to control the initiation and imposition effect of the model. The imposition dummies for basic goods like *d1_aduty_bas*, *d2_aduty_bas*, *d3_aduty_bas* and *d4_aduty_bas* show negative coefficient. Even *d1_aduty_bas* is significant at 1% level of significance and trade reduces by -29.46% after the imposition on basic goods. Coefficients of Capital goods dummies have negative sign but are insignificant. For Intermediate goods the dummies are positive and statistically significant for two years after the imposition. Import value rather increases by 43.47% and 26.99% which is contradictory.

Studies by Aggarwal (2005) and Ganguli (2008) have found that during 1993 - 2003 the Indian experience was similar to the experience of the developed countries. But the present study does not go with it. As far as the trade effects are concerned, India's antidumping policy has been ineffective to curb the import even after the imposition of AD duty during 2003 - 2012. Surprisingly, the price effect is high significant in both named and unnamed countries. There is no evidence of trade diversion.

7.2 Recommendations

- 1) The antidumping agreement of the WTO needs to be redrafted. Its members have been violating many the ADA clauses because there is ambiguity in the existing agreement. The procedure of initiation and investigation has to be transparent so that the member countries do not misuse it.
- 2) There should be more powers with the DSB panel than at present article 11 of DSU. As per the article 11 DSB panel has limited role to play. It determines whether or not the cases were established in an unbiased and objective manner. But an issue such standard of review is particularly very complicated because it directly impacts upon determinations made by national authorities. So the panel must have authority to overturn the national determinations. Except finding the conformity of the measures imposed by the national authorities with the relevant agreement, the panel has little scope to overturn a determination made by the national investigating authorities.
- 3) As for the use of contingent protection measures there should be special provisions for the developing countries. At present the rules are 'one coat fits all'. The efficient industries from the developing world have been targeted heavily. Many researchers observed that when a developed country targets industries from developing world, they almost vanish from the market. But industries from the developed countries do not get affected much. Therefore, there should be special treatment to the suppliers from the developing countries.
- 4) The US antidumping law is almost 100 years old and has some objectionable provisions which are not to WTO. Therefore, it needs to be repealed immediately.

- 5) To bring more transparency into the procedures of investigations, all the related calculations and data used should be available in the public domain for the parties involved and the researchers who want to study them. At present almost everything related to the calculations of the dumping margins, dumping injuries and construction of normal value has been kept confidential. Thus there is lot of scope to doubt the investigation procedures.
- 6) According to Article 2.4 of the antidumping agreement, a comparison between the normal value and export price needs to be fair. For that the dumping margin needs to be established on the weighted average basis or on the transaction to transaction basis. The article also provides some exceptions under which comparison is allowed between the individual export prices and weighted average normal prices. But this and many other studies shows that this exception has become almost a regular practice of the national investigating authorities. This has helped the authorities to inflate the dumping margins. Therefore, the article 2.4 of the AD agreement needs to be reviewed to avoid the use of the exceptions provided therein.
- 7) The repeated AD investigations on the same products from the developing countries immediately after the terminations of the earlier initiations. Therefore, Article 5.3 which allows doing this need to be reviewed immediately.
- 8) Practices like ‘Zeroing’ and ‘Public interest clause’ by the US and EU are inconsistent with the WTO antidumping agreement and therefore they should be stopped by the WTO.
- 9) Trade effects of AD investigations and the AD duty impositions are not very trade depressing. Trade value and trade volume do not fall significantly. That could be due to the inelastic nature of the demand for those products. Therefore, the investigating agency should also calculate the welfare losses as a whole before imposing the duty.
- 10) The industry specific trade effects reveal that the trade effects of AD investigations are not uniform across the industries. There are some industries where the trade effects are negligible and others get affected significantly. So there could be different policies for different industries and should be applied case by case.

7.3 Future Research Issues

This study has focused on India's experience of the AD policy. There are only few studies available on the trade effects of India's AD policy on the exporters to India. Aggarwal and Ganguli estimated the trade effects of India's trade policy using data up to 2003, whereas our study has used updated it using data up to 2014. There are not available studies on the trade effects on the Indian exporter being targeted abroad. So there is lot of scope to work on the trade effects on Indian industries targeted outside.

Similarly, there is scope to work on the trade effects of antidumping policy on the upstream and downstream industries. At the same time there could be study on the welfare effects of the antidumping policy.

With the primary focus on domestic producers and market outcomes for the investigated product, there has been little study of effects for other agents affected by the AD law. Many AD cases involve products that are important inputs for other sectors of the economy and therefore the effects on those sectors must be studied and documented. Yet with the exception of Feinberg and Kaplan (1993) and Hughes et al. (1997), there has been hardly any study of the economic impact to downstream sectors.

There is a need of a comparative study of the trade effects on developed countries vs developing countries. There are studies on US and EU but very few studies on the developing countries.

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Annexure - I

A Comparative Analysis of Trade Effects of Antidumping on the Imports of India, US, EU and China

India:

Table A : Signaling Effect, Initiation Effect and Imposition Effect			
Variables	Import Value	Import Quantity	Unit value
	Model 1	Model 2	Model 3
ln_wld_(val) (qty) (unit_val) ¹			
L.ln_wld_(val) (qty) (unit_val)	0.252*** (5.262)	0.361*** (6.651)	0.326*** (4.127)
L2.ln_wld_(val) (qty) (unit_val)	0.150*** (3.140)	0.0445 (1.035)	0.0789* (1.878)
d_ini	-0.0157 (-0.220)	-0.00877 (-0.109)	-0.0623 (-0.975)
d1_ini	-0.151* (-1.928)	-0.0304 (-0.303)	-0.111 (-0.950)
d1_aduty	0.142*** (3.239)	0.0123 (0.230)	0.157*** (3.201)
d2_aduty	0.164*** (2.779)	-0.0489 (-0.941)	0.194*** (2.937)
d3_aduty	0.146** (2.052)	0.0755 (1.099)	0.191** (2.446)
d4_aduty	0.0683 (0.890)	-0.00872 (-0.150)	0.227** (2.421)
Constant	9.673*** (13.97)	9.022*** (8.987)	0.626*** (2.819)
Year Dummy (i.year)	YES	YES	YES
Observations	892	845	845
Number of id	141	136	136
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 (Note:- Year dummies have been taken into model as a control variable for trend)			

¹ For the presentation of results in a single table it has been arranged as (val) for Import value as the dependent variable in model 1, (qty) is the import quantity as the dependent variable in model 2 and unit_val is the unit values in model 3.

1. Duty effects

Table B: Duty Effects			
Variables	Import Value	Import Quantity	Unit Price
	Model 1	Model 2	Model 3
ln_wld__(val) (qty) (unit_val)#			
L.ln_wld__(val) (qty) (unit_val)#	0.244*** (5.010)	0.339*** (6.059)	0.319*** (3.947)
L2.ln_wld__(val) (qty) (unit_val)#	0.141*** (2.984)	0.0339 (0.783)	0.0710* (1.805)
d1_aduty	0.115*** (2.587)	0.0318 (0.702)	0.130*** (3.083)
d2_aduty	0.125** (2.355)	-0.0330 (-0.727)	0.168*** (2.989)
d3_aduty	0.124* (1.950)	0.0606 (0.932)	0.203*** (2.912)
d4_aduty	0.0637 (0.980)	-0.0142 (-0.246)	0.248*** (3.093)
adduty_d1a_imp	-0.00338 (-0.720)	-0.00947 (-1.536)	0.0105** (2.386)
adduty_d2a_imp	0.00876** (2.474)	-0.00608 (-1.146)	0.0178*** (4.022)
adduty_d3a_imp	0.00943* (1.656)	0.0105* (1.835)	0.00765* (1.924)
adduty_d4a_imp	0.00928 (1.410)	0.00312 (0.510)	0.0168*** (3.860)
Constant	9.961*** (14.03)	9.059*** (8.709)	0.634*** (2.896)
Year Dummy (I.Year)	YES	YES	YES
Observations	892	845	845
Number of id	141	136	136
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 # Model 1-Value, Model 2-Quantity, Model 3-Unit Value (Note:-Year dummies have been taken into model as a control variable for trend)			

US:

Table C : Trade Effects on US			
Variables	Value	Quantity	Unit value
	Model 1	Model 2	Model 3
In_wld_(val) (qty) (unit value)			
L. ln_wld_(val) (qty) (unit value)	0.694*** (12.60)	0.163 (0.903)	0.107** (2.145)
L2. ln_wld_(val) (qty) (unit value)	0.0136 (0.188)	0.258*** (3.282)	0.136* (1.698)
d_ini	-0.0313 (-0.620)	-0.0118 (-0.338)	-0.00147 (-0.0296)
d1_aini	-0.123 (-1.199)	-0.0586* (-1.782)	-0.0494 (-0.500)
d1_aduty	-0.0317 (-0.392)	-0.0450 (-0.721)	-0.00894 (-0.138)
d2_aduty	-0.0498 (-0.786)	-0.0307 (-0.424)	-0.0240 (-0.336)
d3_aduty	0.00949 (0.194)	0.0141 (0.197)	-0.00758 (-0.123)
d4_aduty	-0.0107 (-0.201)	-0.116 (-1.257)	0.112** (2.038)
Constant	5.813*** (6.848)	10.23*** (4.043)	1.328*** (6.836)
Year dummy (1.year)	YES	YES	YES
Observations	895	829	829
Number of hs_code	82	82	82
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 (Note:-1.Year dummies have been taken into model as a control variable for trend.)			

Table D : Trade Effects on US (Actual Duty Effects)			
Variables	Value	Quantity	Unit value
	Model 2	Model 2	Model 2
ln_wld_(val) (qty) (unit value)			
L. ln_wld_(val) (qty) (unit value)	0.694*** (13.15)	0.162 (0.900)	0.106** (2.148)
L2. ln_wld_(val) (qty) (unit value)	0.00755 (0.111)	0.257*** (3.268)	0.136* (1.675)
d1_aduty	0.0636 (1.322)	0.0320 (0.855)	0.00745 (0.309)
d2_aduty	-0.0409 (-1.108)	0.0256 (0.431)	-0.0443 (-0.973)
d3_aduty	0.0367 (1.108)	0.0552 (0.965)	-0.0389 (-1.170)
d4_aduty	0.0532 (0.684)	-0.0341 (-0.429)	0.0866** (2.218)
adduty_d1a_imp	-0.00899 (-1.327)	-0.0115 (-1.255)	-0.000842 (-0.194)
adduty_d2a_imp	0.00984 (1.549)	-0.00786 (-0.718)	0.00826 (1.404)
adduty_d3a_imp	0.00348 (0.516)	-0.00558 (-0.488)	0.0106** (2.219)
adduty_d4a_imp	-0.00775 (-0.560)	-0.0173* (-1.825)	0.00895** (2.039)
Constant	5.911*** (6.811)	10.27*** (4.064)	1.320*** (6.562)
Year dummy (I.year)	YES	YES	YES
Observations	895	829	829
Number of hs_code	82	82	82
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 (Note:-1.Year dummies have been taken into model as a control variable for trend.)			

EU:

Table E : Trade Effects on EU			
Variables	Value	Quantity	Unit value
	Model 2	Model 2	Model 2
ln_wld_val			
L.ln_wld_val	0.614*** (4.846)	0.368** (2.396)	0.278* (1.930)
L2.ln_wld_val	0.0434 (0.829)	0.0779 (0.844)	-0.0552 (-0.528)
d_ini	0.0540 (1.321)	0.0659* (1.806)	-0.00743 (-0.440)
d1_aini	-0.0225 (-0.580)	0.00743 (0.173)	-0.00959 (-0.398)
d1_aduty	-0.0422 (-0.801)	0.00349 (0.0391)	-0.0187 (-0.280)
d2_aduty	-0.0150 (-0.334)	-0.0406 (-0.714)	0.0522* (1.713)
d3_aduty	-0.0328 (-0.727)	-0.0403 (-0.656)	0.0482 (1.239)
d4_aduty	-0.0672 (-1.253)	-0.0434 (-0.661)	0.0272 (0.674)
Constant	6.466** (2.168)	9.731*** (2.632)	1.157** (2.496)
Year dummy (I.year)	YES	YES	YES
Observations	922	905	905
Number of hs_digits	84	83	83
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 (Note:-1.Year dummies have been taken into model as a control variable for trend.)			

Table F : Trade Effects on EU (Actual Duty Effects)			
Variables	Value	Quantity	Unit value
	Model 2	Model 2	Model 2
ln_wld_val			
L.ln_wld_val	0.616*** (4.826)	0.366** (2.408)	0.275* (1.899)
L2.ln_wld_val	0.0425 (0.780)	0.0781 (0.834)	-0.0545 (-0.518)
d1_aduty	-0.0231 (-0.546)	0.00713 (0.0888)	-0.0148 (-0.237)
d2_aduty	-0.00280 (-0.0731)	-0.0429 (-0.883)	0.0567* (1.847)
d3_aduty	-0.0256 (-0.598)	-0.0442 (-0.794)	0.0516 (1.387)
d4_aduty	-0.0640 (-1.282)	-0.0480 (-0.799)	0.0299 (0.818)
adduty_d1a_imp	0.0120 (1.256)	0.0114 (0.937)	-0.00465 (-0.677)
adduty_d2a_imp	-0.000741 (-0.114)	-0.00599 (-0.616)	0.00167 (0.408)
adduty_d3a_imp	-0.000847 (-0.174)	-0.00782 (-0.805)	0.00111 (0.203)
adduty_d4a_imp	0.00278 (0.258)	-0.00387 (-0.321)	0.00198 (0.298)
Constant	6.684** (2.156)	9.768*** (2.650)	0.880** (2.551)
Year dummy (I.year)	YES	YES	YES
Observations	922	905	905
Number of hs_digits	84	83	83
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 (Note:-1.Year dummies have been taken into model as a control variable for trend.)			

China:

Table G : Trade Effects on China			
Variables	Value	Quantity	Unit value
	Model 2	Model 2	Model 2
ln_wld_val			
L.ln_wld_val	0.768*** (3.958)	0.511** (2.285)	0.273** (2.218)
L2.ln_wld_val	0.0305 (0.279)	0.133 (0.971)	0.0784 (1.347)
d_ini	0.0491 (0.960)	-0.0891 (-0.857)	0.143 (1.141)
d1_aini	-0.0878 (-0.878)	-0.0706 (-1.028)	0.0264 (0.277)
d1_aduty	0.0874 (0.813)	0.0466 (0.442)	0.0376 (0.357)
d2_aduty	0.0845 (0.697)	0.0652 (0.550)	-0.0304 (-0.350)
d3_aduty	0.0836 (0.664)	0.0169 (0.116)	-0.0418 (-0.556)
d4_aduty	0.190 (1.294)	0.0290 (0.191)	0.0244 (0.436)
Constant	3.633** (2.003)	6.095*** (2.636)	1.064*** (3.379)
Year dummy (I.year)	YES	YES	YES
Observations	493	493	493
Number of hs_code	45	45	45
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 (Note:-1.Year dummies have been taken into model as a control variable for trend.)			

Table H: Trade Effects on China (Actual Duty Effects)			
Variables	Value	Quantity	Unit value
	Model 2	Model 2	Model 2
ln_wld_val			
L.ln_wld_val	0.761*** (3.863)	0.484** (2.091)	0.265** (2.171)
L2.ln_wld_val	0.0294 (0.251)	0.146 (1.053)	0.0896 (1.639)
d1_aduty	0.141 (1.506)	0.184 (1.594)	0.0400 (0.679)
d2_aduty	-0.0410 (-0.419)	0.0158 (0.119)	-0.0145 (-0.264)
d3_aduty	-0.803** (-2.533)	-0.705 (-1.481)	0.0756 (0.400)
d4_aduty	-1.184** (-2.548)	-1.184*** (-2.873)	0.389** (1.972)
adduty_d1a_imp	-0.00852 (-0.642)	-0.0416* (-1.905)	-0.00895 (-0.945)
adduty_d2a_imp	0.0493*** (4.678)	0.0228 (0.954)	-0.0134 (-1.594)
adduty_d3a_imp	0.253*** (2.840)	0.207 (1.584)	-0.0391 (-0.705)
adduty_d4a_imp	0.380*** (3.015)	0.335*** (3.072)	-0.104* (-1.785)
Constant	3.828** (2.179)	6.320*** (2.594)	1.147*** (3.689)
Year dummy (I.year)	YES	YES	YES
Observations	493	493	493
Number of hs_code	45	45	45
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 (Note:-1.Year dummies have been taken into model as a control variable for trend.).			

Annexure -II

Table I : Relative Trade Effects (for Machines vis-à-vis Vehicles) HS Classification			
Variables	Value	Quantity	Unit Price
	Model 1	Model 2	Model 3
ln_wld_(val) (qty)(unit_val)#			
L.ln_wld_(val) (qty)(unit_val)#	0.156**	0.107	0.0389
	(2.495)	(1.093)	(0.336)
L2.ln_wld_(val) (qty)(unit_val)#	0.465***	-0.00521	0.107
	(11.88)	(-0.0874)	(1.436)
d1_ini	-0.195	0.409	0.638***
	(-0.610)	(1.141)	(3.615)
d1_aduty	0.131	-0.176	0.0595
	(0.923)	(-0.865)	(0.293)
d2_aduty	0.586***	0.161	-0.170
	(3.076)	(0.879)	(-0.741)
d3_aduty	0.558***	0.433**	-0.267
	(3.167)	(1.978)	(-0.991)
d4_aduty	0.526***	0.523*	-0.113
	(3.703)	(1.816)	(-0.690)
d1_ini_machines	-0.225	-0.450	-0.925***
	(-0.876)	(-1.231)	(-3.137)
d1_aduty_machines	0.438***	-0.0285	0.396*
	(3.227)	(-0.149)	(1.795)
d2_aduty_machines	-0.558***	-0.530*	0.508
	(-4.852)	(-1.828)	(1.427)
d3_aduty_machines	-0.532***	-1.075***	0.757**
	(-3.774)	(-3.703)	(2.368)
d4_aduty_machines	-0.834***	-1.182***	0.758*
	(-3.813)	(-2.883)	(1.929)
Constant	6.772***	12.61***	4.105***
	(4.998)	(11.83)	(3.838)
Year dummy (i.year)	YES	YES	YES
Observations	180	156	156
Number of id	21	17	17
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 # Model 1-Value, Model 2-Quantity, Model 3-Unit Value (Note:-Year dummies have been taken into model as a control variable for trend)			

Table J : Relative Trade Effects (for Chemicals vis-à-vis Plastics) HS Classification			
Variables	Value	Quantity	Unit Price
	Model 1	Model 2	Model 3
ln_wld_(val) (qty)(unit_val)#			
L.ln_wld_(val) (qty)(unit_val)#	0.327*** (6.683)	0.381*** (5.999)	0.229*** (3.503)
L2.ln_wld_(val) (qty)(unit_val)#	0.0593 (1.146)	0.199*** (3.671)	-0.0107 (-0.183)
d1_ini	-0.482** (-2.420)	-0.561*** (-2.635)	-0.0658 (-0.488)
d1_aduty	0.422*** (2.584)	0.400** (2.469)	0.0563 (0.617)
d2_aduty	0.734** (1.978)	0.317 (1.318)	0.312 (0.989)
d3_aduty	-0.180 (-0.675)	0.336 (1.005)	0.168 (1.129)
d4_aduty	0.0949 (0.369)	0.575** (2.242)	0.0848 (0.608)
d1_ini_chem_plast	0.455** (2.177)	0.540** (2.372)	-0.0439 (-0.477)
d1_aduty_chem_plast	-0.359* (-1.864)	-0.399** (-2.100)	-0.0153 (-0.149)
d2_aduty_chem_plast	-0.670* (-1.788)	-0.379 (-1.461)	-0.267 (-0.868)
d3_aduty_chem_plast	0.391 (1.499)	-0.217 (-0.647)	-0.185 (-1.406)
d4_aduty_chem_plast	0.00607 (0.0230)	-0.622** (-2.273)	-0.0571 (-0.490)
Constant	9.754*** (8.307)	6.802*** (4.170)	-0.219 (-1.193)
Year dummy (I. year)	YES	YES	YES
Observations	619	596	596
Number of id	102	101	101
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 # Model 1-Value, Model 2-Quantity, Model 3-Unit Value (Note:- Year dummies have been taken into model as a control variable for trend)			

Variables	Value	Quantity	Unit Price
	Model 1	Model 2	Model 3
ln_wld_(val) (qty) (unit_val) #			
L.ln_wld_(val) (qty) (unit_val) #	0.245*** (5.129)	0.356*** (6.964)	0.345*** (4.401)
L2.ln_wld_(val) (qty) (unit_val) #	0.131*** (2.873)	0.0530 (1.196)	0.0753 (1.581)
d1_ini_basemetals	-0.219* (-1.730)	-0.0311 (-0.152)	-0.246* (-1.856)
d1_aduty_basemetals	-0.161 (-1.402)	-0.288 (-1.476)	0.0207 (0.155)
d2_aduty_basemetals	-0.193 (-1.342)	-0.292 (-1.248)	0.0300 (0.188)
d3_aduty_basemetals	0.160 (0.934)	0.148 (0.861)	-0.123 (-1.076)
d4_aduty_basemetals	-0.120 (-0.552)	0.135 (0.895)	-0.395** (-2.484)
d1_ini_minerals	-0.284 (-1.389)	-0.146 (-0.890)	0.122 (0.776)
d1_aduty_minerals	0.388** (2.165)	0.318** (1.974)	-0.165 (-1.479)
d2_aduty_minerals	0.720** (2.055)	0.110 (1.061)	0.0576 (0.427)
d3_aduty_minerals	0.572* (1.734)	-0.378 (-0.623)	0.267 (0.975)
d4_aduty_minerals	0.222 (0.660)	-0.813 (-1.333)	0.320 (1.180)
Constant	10.11*** (15.38)	8.979*** (8.719)	0.595*** (3.178)
Year Dummy (i.year)	YES	YES	YES
Observations	892	845	845
Number of id	141	136	136
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 # Model 1-Value, Model 2-Quantity, Model 3-Unit Value (Note:-1. Year dummies have been taken into model as a control variable for trend. 2. Statistics in the second parenthesis below the significant z statistics shows the percentage change.)			

Annexure - III

Table K : Trade Effects on Emerging Countries			
Variables	Value	Quantity	Unit value
	Model 1	Model 2	Model 3
ln_named_(val) (qty)(unit_val)#			
L. ln_named_(val) (qty)(unit_val)#	0.287** (2.529)	0.380*** (2.828)	-0.0192 (-0.213)
L2. ln_named_(val) (qty)(unit_val)#	0.0561 (0.887)	0.0269 (0.355)	-0.0147 (-0.276)
d1_ini	-0.179 (-1.123)	-0.208 (-1.331)	0.0710 (1.154)
d1_aduty	0.412** (2.519) (50.98)	0.355* (1.930) (42.61)	0.0295 (0.499)
d2_aduty	0.167 (0.811)	0.0220 (0.110)	0.0973 (1.341)
d3_aduty	0.432* (1.668) (54.03)	0.0394 (0.0882)	0.110 (0.799)
d4_aduty	0.384 (1.343)	-0.0813 (-0.215)	0.235 (1.350)
emrg_d1_ini	-0.0539 (-0.312)	0.00645 (0.0343)	-0.113 (-1.314)
emrg_d1_aduty	-0.195 (-1.229)	-0.266 (-1.384)	0.0508 (0.756)
emrg_d3_aduty	-0.101 (-0.439)	0.139 (0.341)	-0.0440 (-0.333)
emrg_d4_aduty	0.163 (0.545)	0.399 (1.062)	-0.139 (-0.965)
Constant	9.410*** (4.522)	7.327*** (3.983)	2.280*** (5.296)
Year dummy (I.year)	YES	YES	YES
Observations	804	797	793
Number of id	138	135	135
Robust z-statistics in parentheses *** p<0.01, ** p<0.05, * p<0.1 (Note:-1.Year dummies have been taken into model as a control variable for trend.)			

Annexure - IV

Table L :												
Exporter	China	Korea, Republic of	Taipei, Chinese	United States	Japan	Thailand	Indonesia	India	Russian Federation	Brazil	Other	Total
Argentina	70	12	11	7	5	4	5	9	2	38	65	228
Australia	20	19	7	6	8	12	8	N.A.	1	N.A.	41	122
Brazil	56	10	9	20	2	9	3	8	4	N.A.	76	197
Canada	25	9	5	11	3	2	3	4	3	5	49	119
Chile	1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	7	10
China	N.A.	27	14	33	29	4	3	7	9	1	49	176
Colombia	21	1		2	N.A.	N.A.	N.A.	N.A.	3	N.A.	7	34
Costa Rica	N.A.	N.A.	N.A.	1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	2	3
Czech Republic	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1	1
Dominican Republic	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	2	2
Egypt	12	4	2		3	3	3	5	N.A.	N.A.	22	54
European Union	85	12	11	8	7	19	13	20	18	5	100	298
Guatemala	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1	1
India	132	39	42	27	25	28	22	N.A.	16	8	195	534
Indonesia	11	6	5	1	2	3		8	3	N.A.	15	54
Israel	5	N.A.	N.A.	3	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	15	23
Jamaica	1	N.A.	N.A.	N.A.	N.A.	1	1	N.A.	N.A.	N.A.	1	4
Japan	1	1	1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	4	7
Korea, Republic of	21		4	8	16	3	4	3	3	N.A.	20	82
Latvia	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	2	2
Lithuania	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	2	N.A.	5	7
Malaysia	5	7	4	1	1	5	8	N.A.	N.A.	N.A.	7	38
Mexico	28	2	3	21	2		1	1	6	10	25	99
Morocco	1	N.A.	N.A.	1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	4	6
New Zealand	4	3	1	N.A.	N.A.	5	1	N.A.	N.A.	N.A.	10	24
Nicaragua	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1	1
Pakistan	8	7	4	1		4	6	1		1	18	50
Paraguay	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1	1	2
Peru	16		3	1	N.A.	N.A.	1	2	3	3	21	50
Philippines	2	1	1	N.A.	N.A.	N.A.	1	N.A.	2	N.A.	4	11
Poland	2	N.A.	1	N.A.	N.A.	N.A.	N.A.	N.A.	1	N.A.	5	9
Russian Federation	6	1	3	N.A.	N.A.	N.A.	N.A.	1	N.A.	1	16	28
Singapore	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	2	2
South Africa	20	16	6	6	1	4	5	12	2	5	55	132
Taipei, Chinese	6	4			2			1	1		3	17
Thailand	14	5	5		2		3	1	2		15	47
Trinidad and Tobago	2	N.A.	N.A.	N.A.	N.A.	1	1	1	N.A.	N.A.	2	7
Turkey	63	7	10	2		11	9	11	5	1	44	163
Ukraine	9	1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	9	N.A.	19	38
United States	99	19	20		23	10	12	14	7	9	132	345
Uruguay	1	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	1	0	2
Venezuela, Bolivarian Republic of	11	N.A.	N.A.	2	3	1	N.A.	N.A.	2	N.A.	6	25
Viet Nam	1	N.A.	1	N.A.	N.A.	N.A.	1	N.A.	N.A.	N.A.	1	4
Total	759	213	173	162	134	129	114	109	106	89	1070	3058
Sharaes %	24.82	6.97	5.66	5.30	4.38	4.22	3.73	3.56	3.47	2.91	24.82	100
Average	17.65	4.95	4.02	3.77	3.12	3.00	2.65	2.53	2.47	2.07	17.65	71.12
Source :												
Note : N.A.=Not Available												

Annexure - V

Section	Description
I	Live Animals; Animal Products
II	Vegetable Products
III	Animal or Vegetable Fats and Oils and Their Cleavage Products; Prepared Edible Fats; Animal or Vegetable Waxes
IV	Prepared Foodstuffs; Beverages, Spirits and Vinegar; Tobacco and Manufactured Tobacco Substitutes
V	Mineral Products
VI	Products of the Chemical or Allied Industries
VII	Plastics and Articles Thereof; Rubber and Articles Thereof
VIII	Raw Hides and Skins, Leather, Furskins and Articles Thereof; Saddlerly and Harness; Travel Goods, Handbags and Similar Containers; Articles of Animal Gut (Other than Silk-Worm Gut)
IX	Wood and Articles of Wood; Wood Charcoal; Cork and Articles of Cork; Manufactures of Straw, of Esparto or of Other Plaiting Materials; Basketware and Wickerwork
X	Pulp Of Wood or of Other Fibrous Cellulosic Material; Recovered (Waste and Scrap) Paper or Paperboard; Paper and Paperboard and Articles Thereof
XI	Textiles and Textile Articles
XII	Footwear, Headgear, Umbrellas, Sun Umbrellas, Walking-Sticks, Seat-Sticks, Whips, Riding-Crops and Parts Thereof; Prepared Feathers and Articles Made Therewith; Artificial Flowers; Articles of Human Hair
XIII	Articles of Stone, Plaster, Cement, Asbestos, Mica or Similar Materials; Ceramic Products; Glass and Glassware
XIV	Natural or Cultured Pearls, Precious or Semi-Precious Stones, Precious Metals, Metals Clad with Precious Metal and Articles Thereof; Imitation Jewellery ; Coin Thereof; Imitation Jewellery ; Coin
XV	Base Metals and Articles of Base Metal
XVI	Machinery and Mechanical Appliances; Electrical Equipment; Parts Thereof; Sound Recorders and Reproducers, Television Image and Sound Recorders and Reproducers, and Parts and Accessories of Such Articles
XVII	Vehicles, Aircraft, Vessels and Associated Transport Equipment
XVIII	Optical, Photographic, Cinematographic, Measuring, Checking, Precision, Medical or Surgical Instruments and Apparatus; Clocks and Watches; Musical Instruments; Parts and Accessories Thereof
XIX	Arms and Ammunition; Parts and Accessories Thereof
XX	Miscellaneous Manufactured Articles
XXI	Works of Art, Collectors' Pieces and Antiques
...	Unknown