

**SANEI WORKING PAPER SERIES**

**No. 12 - 07**

**ANTI-DUMPING, COMPETITIVENESS AND  
CONSUMER WELFARE:  
A STUDY ON COMMODITY PRICES WITH A SPECIAL  
REFERENCE TO INDIA**

**DIBYENDU MAITI**



**South Asia Network of Economic Research Institutes**

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# **ANTI-DUMPING, COMPETITIVENESS AND CONSUMER WELFARE: A STUDY ON COMMODITY PRICES WITH A SPECIAL REFERENCE TO INDIA**

DIBYENDU MAITI

## **ABSTRACT**

*The usage of unconventional trade protections have been thriving worldwide and anti-dumping initiation is one of them. India has appeared the highest initiator of anti-dumping in the world during 1995-2010. The paper tries to investigate the impact of such initiatives on trade flows and resultant welfare with a particular reference to Indian economy. Anti-dumping initiative defends competition, protects domestic producers and goes against consumer welfare in general, but the strategic initiative may lead to rise in AD-jumping FDI flows, resulting to an improvement in domestic welfare. Theoretically, we find that the possibility of AD-jumping FDI depends on the foreign price and labour market conditions in the domestic economy. Closer to the oligopoly price in the domestic economy lower would be the possibility and greater would be a loss of domestic welfare. Moreover, in the presence of unions, such possibility goes down.*

*The study uses industry and firm level information empirically to see the impact. It is observed that the AD initiation does not affect the imports significantly. FDI has grown but still very small. The mark-up of AD intensive industries seems to be on the higher side and does not support the AD-jumping FDI proposition effectively. A large share of Indian initiatives, similar to other countries, has been against China and other neighboring countries. We suggest that AD investigation process should look at (i) the price formation and rules of origin in the foreign markets, (ii) the extent of extra-legal employment and environmental damage due to the increased import competition. Although Indian government has been quite active in taking decision on any petition against dumping, the existing laws favour only a small section of producers, do not apply uniform methods of injury calculation and do not show any concern on the labour rights and environment damages. We suggest that the safeguard measure should be taken up first before using anti-dumping measure in case of dumping.*

**Key Words:** Anti-Dumping, Welfare, Strategic Trade Policy, AD-jumping FDI, International Relation

**JEL Code:** F16, F51

SECTION 1  
INTRODUCTION  
CONTEXT, PROBLEMS AND LEGAL FRAMEWORK

Trade policies almost all over the world have transformed from inward oriented and protective to more outward and liberal regimes. While traditional trade barriers (e.g., tariff and quotas) have declined worldwide, the usage of ‘unconventional’ trade protections (e.g., antidumping, countervailing and safeguard measures) have been thriving in recent decades. This is no longer confined into the developed countries but also has extended to the developing economics. WTO has been trying to dismantle and reduce those barriers substantially by initiating discussion between partners through international agencies. The scholars and policy makers are taking interests to critically examine the implication of such practices on the not only domestic economy but also international trade. The recent economic crisis in the West has further added on to such initiatives. The increasing volatility in the west has forced the most of export-oriented economies including emerging countries to find out more stable and large markets elsewhere in the world for their sustainable growth. On the other hand, a group of large countries seems to have a tendency to protect themselves from external markets, sometimes strategically to receive more direct investments and find more spill-over effects in the domestic activities. While the former group would try to promote exports strategically, the later one would tend to employ unconventional trade practices to protect them strategically. This seems to raise a conflicting relationship between them and restricts the trade flows. The current paper investigates the implications of such unconventional trade practices on their consumer.

From the inception in 1945, GATT campaigned against the conventional and unconventional trade barriers between the member countries and the initial focus was on the reduction of tariff and quotas on tradable commodities. This has been quite successful venture and the most of the countries have reduced such barriers substantially during the post-Second World War. Since the provision was made for any government that maintained a liberal trade policy may impose temporary protection against imports of one or more goods from one or more countries under specific conditions. The major forms of such non-tariff barriers include custom valuation, import licensing procedures, govt. procurement, product standard, technical barriers, countervailing measures, dumping and anti-dumping measures. At first, the Kennedy Round (1963-67) under GATT brought some of those Non-tariff barriers (NTBs) into the list of withdrawal for their reduction through negotiations between member countries. This was not much successful because the major influencing member countries had been using such barriers. Then, the Tokyo Round (1973-79) extended the lists and made some progress. While all these previous attempts were only modest, the Uruguay Round (1986-94) was more ambitious by recommending that all countries joining WTO should agree on NTBs reductions. These issues became serious matters of discussion in the national policy domain over all the member countries since then. The focus of our study is limited on anti-dumping measures. Article VI of the GATT stipulates that ‘in order to offset or prevent dumping a contracting party may levy on any dumped product an antidumping duty not greater in amount than the margin of dumping in respect of such countries’. The most WTO member countries have adopted/amended their antidumping legislation largely in accordance with the GATT provisions to deal with the dumped imports. Some of the non-members countries have also adopted their antidumping legislation. Almost 90% of total world imports are now entering countries in which anti-dumping laws are in place (Aggarwal, 2002). Moreover, such initiatives are not only limited to the developed countries now-a-days, the proliferation of using such measures has been increasingly observed in the developing and



emerging countries in recent years. The share of developing countries in total cases was 10% at the beginning of the 1990s; it is almost 50% now (Aggarwal, 2002). For example, according to the WTO and the *Global Antidumping Database* (Bown, 2006), India filed 218 cases during the period 2000-2003 and is currently one of the most intensive users of the AD around the world. The need for not only the acceleration of growth but also the promotion of development of these emerging and developing countries sets the relevance to look at the implication of these measures on the economies.

The primary purpose behind the provision of anti-dumping measures was to protect domestic industries from awful competition. While some of the existing studies have advocated AD duties as means to protect the domestic industry against stiff foreign competition, others have viewed AD as inherently protectionist in nature and going against the tenet of free trade and comparative advantage. A vast number of empirical literature shows that AD initiation has an adverse impact on imports (Khatibi, 2009), exports (Konings and Vandebussche, 2009) and total factor productivity (Konings and Vandebussche, 2009). In spite of these distortionary effects, the use of anti-dumping has been thriving and one needs to critically examine further intuitions behind these. While investigated the implication of anti-dumping initiatives, the scholars largely have been limited to look at the producer activities and their interests, and the issues of consumer welfare has been ignored so far. In fact, the practice of injury calculation of dumping does not include the welfare aspect of consumers. This has prompted us to undertake this study in focusing the issues of consumer welfare with a particular reference to India.

At least, there would be two counteracting forces by which anti-dumping might affect the competitiveness and commodity price in the domestic economy. It is easily understood that anti-dumping measures give certain market power to the domestic firm. This market power must push up the commodity prices and reduces the consumer welfare. On the other hand, the hypothesis of tariff-jumping foreign direct investment (FDI) – firms engage in direct investment abroad to overcome foreign trade barriers – is fairly well established in the international trade literature. The anti-dumping initiatives might work on similar manner and help inward flow of FDI in promoting the competitiveness in the domestic industry. These two counteracting forces will account for the direction of competitiveness and commodity prices. Therefore, the present study will explore the issue of anti-dumping on commodity prices and consumer welfare of a domestic country through its effect on competition and FDI flow with a special reference to India.

## SECTION 2 LITERATURE REVIEW

Often in the literature, tariff and anti-dumping tools are considered to be similar protective instruments that tend to insulate domestic industries from foreign competition and generate revenues to countries that initiate them. However, a tariff is typically designed to maximize either domestic revenue or domestic welfare. An anti-dumping duty, on the other hand, is usually set to make up for the difference between a foreign firm's price at home and the price of its exports, provided that the latter is lower. In other words, an anti-dumping duty serves the purpose of industry protection, and also produces revenue as a by-product, but it is not designed to maximize protection, revenue, or welfare.

The existing literature has traced mainly two types of dumping - price dumping and cost dumping. While the former refers to international price discrimination, the latter relates to the practice of selling at prices below per unit cost. The provision of antidumping law was put up by in the GATT/WTO to deal with the price dumping. There are at least four different reasons that an exporter would prefer to dump – predatory, cyclical, seasonal and discriminatory. Predatory dumping is intended to drive out rivals. Cyclical dumping occurs during an industry downturn in demand, with sales at prices that cover average variable cost but are below average total cost. Seasonal dumping unloads excess inventories, especially on products that are perishable or going out of fashion. Persistent dumping is a form of international price discrimination, with the exporting firm facing a less elastic demand curve in the home market, and having some ways to limit or prevent re-import back into its home market. Nothing can be done in presence of the last three types. Only when an exporter dumps due to predatory reason, an action might to be taken up.

The major economic justifications for antidumping laws have been that these laws should provide protection to the domestic industries from the competitive process and the consumer from monopoly power of the foreign exporters (e.g., Viner 1923, Barcelo 1971, Trebilcock and John Quinn 1979, Deardorff 1993). Two other protection-based justifications for imposing antidumping duties, however, have been discussed by scholars and these include optimal tariff argument of protection and strategic trade policy argument. The optimum tariff argument suggests that the domestic can derive terms of trade gains from conditional protection. On the other hand, the domestic economy would be expected to be experiencing positive externalities generated by protecting some sectors in the domestic economy. Critics of the antidumping legislation do not subscribe the above-mentioned economic arguments. The political economy of protection would provide better explanation behind anti-dumping initiatives. The argument suggests that the influential domestic producers over the domestic political parties through lobbying determine the antidumping cases (see Tharakan and Waelbroeck, 1994, Tharakan 1995).

Whatever have been the reason behind anti-dumping, it would be important to understand actual implication of such initiatives into the economy. Many scholars show that such antidumping initiatives have been economically inefficient in many situations (e.g., Hutton and Trebilcock, 1990; Hyun Ja Shin 1998; Bourgeoise and Messerlin, 1998; Willig, 1998; Leclerc, 1999; Prusa and Skeath 2001). At the same time, the legal provision of antidumping has various ambiguities in defining dumping and in calculating injury margin. Therefore, the interpretation of such laws widely varies across the countries (see, Murray and Rousslang 1989, Lindsey 2000, Araujo et. al 2001, Tharakan 1995, Didier 2001, Hsu 1998, Almstedt and Norton 2000, Tharakan 1991,1996,1999 Tharakan and Waelbroeck 1994).

Antidumping policy is suggested to be a trade policy instrument that, if used appropriately, curbs anti-competitive practices by foreign firms by deterring predatory pricing. However, charging two or more prices for a like product in two or more markets separated by tariffs, transport costs and technical standards, is economically rational in many situations (Deardorff 1993, Willig 1998). Moreover, an exporter may charge consumers a lower price in foreign markets when he introduces a product in a new market to create market for the product (Boltuck 1991). Exports at low price might be aimed at developing trade connections/increasing market share in new markets. In addition, if a firm produces what Deardorff (1993) called 'learning by doing' products then the firm by charging lower prices in foreign markets will gain in experience as well as in the sales revenue obtained. Price discrimination in this case may be motivated by steep learning curve for the product. These forms of price discrimination are pro-competitive (Warner 1992). Bernhofen (1995) argued that price discrimination in these markets arises from differences in country-specific final good production costs. The price differential is shown to increase as the productivity difference increases. Scholars like Warner (1992) and Willig (1998) argue that in times of slack home market demand, an exporter may sell his excess output in export markets with the objective of maintaining full capacity. In this case price discrimination is a rational business strategy. Clearly, when price discrimination is caused by reasons other than predatory intent and is consistent with competitive conditions in the importing market then it can be socially beneficial, despite its adverse effects on domestic producers of competing goods (Willig, 1998; Boltuck, 1991). Domestic consumers benefit from the low prices, and if the importing market is perfectly competitive, the benefits to consumers outweigh the losses of domestic producers. Price discrimination ought not to be actionable in such cases as it does not violate competition laws (Tharakan, 1995 and many others). Antidumping duties are needed only to offset the unfair advantage that foreign exporters attempt to derive by charging lower prices than would be possible under normal market conditions. Thus, preventing predation is a potentially important and beneficial role for antidumping policy (Aggarwal, 2002 and reference therein).

In other paper, Aggarwal (2007) investigates the industry and firm-level patterns of AD use across 18 most active AD user countries and comes out with striking revelations on how only a handful of countries of the world and merely a few large and powerful firms in large concentrated industries in these countries are asymmetrically benefiting from the AD instrument. In contrast, a large segment of the goods producing sector, which is dominated by small and medium producers, is not in a position to use this 'so-called' trade remedial instrument.

In spite of the mentioned well-defined rules, Anti-dumping has hit India hard. The repeated EU anti-dumping action has led to a decline in exports of Indian cotton fabrics by 47 per cent in volume and 34 per cent in value terms during 1997. This has been reflected in the import data maintained by the European Commission. According to an estimate of the Cotton Textiles Export Promotion Council, Indian exports have already lost business worth over ECU 50 million during 1997 on account of these proceedings. India has retaliated with 13 cases, many against its major trading partners, while Indian exports have been slammed with 12 anti-dumping cases since 1993, eight of them by EC (Johri, 1999). Similar to the previous studies, Vandebussche and Zanardi (2007) investigate the effect of AD on bilateral trade flows between the new adopters and their trade partners using a gravity model spanning 21 years (1980-2000) of annual observations and confirms that the AD effects are not small and lead to depress the aggregate imports in new users by 21 billion US\$ a year (or 8.9%). For some developing countries like India and Taiwan, the dampening effects of AD laws on trade flows are found to largely offset the gains from trade liberalization.

On the other hand, anti-dumping tools thought of strategic trade policies have been substantial for the benefits of domestic economy in the recent literature. A study by Dinlersoz and Dogan (2010) concludes that, in general, when the foreign demand elasticity is sufficiently low, the government prefers the anti-dumping duty both from a revenue and protection standpoint, but at the same time the foreign firm may find a duty unfavorable compared to a tariff. When the foreign demand elasticity is sufficiently high, on the other hand, a revenue-maximizing tariff is favored by both the government and the foreign firm over the anti-dumping duty. In addition, when competition is introduced to the foreign market, it can be shown that the higher the competition foreign firm faces at home, the less attractive is the use of an anti-dumping duty compared to the revenue-maximizing tariff for both protection and revenue.

Using the firm level data, Belderbos et al. (1997) finds that the anti-dumping in the United States and the European Union raises the probabilities of FDI substantially. Ray and Pain (1999) find evidence of tariff-jumping FDI by Japanese firms in the US and the EU. Girma *et al.* (2002) provide similar results for the U.K. Using data on all US antidumping actions from 1980 through 1990, Blonigen (2006) finds only a modest level of tariff-jumping in response to antidumping investigations. Overall, with the exception of Blonigen (2006), recent empirical studies note a substantial tariff-jumping FDI reaction to AD activities.

Khatibi (2009) empirically studies the effects of European antidumping actions on import diversion by using a unique data set at the 8-digit product level. This paper shows that although antidumping protection predominantly benefits the EU domestic market rather than *non-named* countries, it is not strong enough to offset the decrease in imports from *named* countries. When EU members reveal a comparative disadvantage, antidumping becomes more restrictive for *named* countries. On the other hand, the analysis provides some evidence that intra-EU trade activity becomes more intensive, suggesting that antidumping protection is good for disadvantaged products.

According to Konings and Vandenbussche (2009), while antidumping protection raises the domestic sales of the more “traditional” non-exporting firms on the protected market with about 5%, it negatively affects the firm-level exports of similar products as the protected ones. Export sales of protected firms fall by almost 8% compared to a relevant control group of unprotected firms. The drop in firm-level exports more than doubles for firms that are global, i.e. firms with foreign affiliates. Protection also affects the extensive margin of exporters but to a lesser extent. Moreover, the paper finds that the productivity of exporters falls while that of non-exporters rises during antidumping protection.

Gao and Miyagiwa (2005) investigate theoretically the issue of reciprocal dumping, in which firms first engage in cost-reducing R&D and then compete internationally. When one government institutes antidumping law the protected firm decreases R&D investment while the constrained firm increases its level. When the other government also adopts antidumping law, the effects could be reverse. The resultant R&D level could be greater for both firms relative to the level under free trade.

Konings and Vandenbussche (2009) show that Antidumping (AD) Protection can increase productivity growth of domestic firms in import-competing industries by identifying a panel of domestic firms between 1993 and 2003, which at some point during this period are affected by AD initiations. Using a difference-in-difference approach, the authors find that AD measures raise Total Factor Productivity (TFP) for protected firms by 1.4 to 12.8% depending on the specification used. Moreover, the effect of protection depends on the “distance-to-the-frontier firm” in the industry. While protection raises TFP growth of

“laggard” domestic firms, it lowers TFP growth for “efficient” firms that operate close to the efficiency frontier.

Another study by Marsh (1998) investigates whether anti-dumping statutes are effective at improving the performance of U.S. firms. As international trade grows and competitors increasingly cross national borders to enter new markets, U.S. trade law becomes a potentially important tool for managers as they consider how to create barriers for foreign competitors. The results of this study suggest that the anti-dumping laws significantly increase returns of U.S. firms that pursue anti-dumping protection. The average petitioner between 1980 and 1992 received a \$46 million increase in market value as a result of filing an anti-dumping petition. However, no significant change in market value was associated with preliminary or final determinations of the International Trade Commission, except when petitions received a negative determination at the final stage of the process. A negative determination/ruling by the ITC at the final stage of the process resulted in a loss of market value. The study invoked the assumption of efficient market hypothesis and used OLS estimation technique.

A set of studies were carried out to gauge the extent of protection granted by anti-dumping laws in Indian scenario which concluded that not much is achieved though the AD statutes. For example, in context of Vitamin C industry in India, although AD was pretty much effective in restricting imports from countries which were named to be dumping, there was also strong evidence of imports being diverted away from named source countries to non-named countries. Moreover, imposition of AD on named countries led to influx of new entrants catering to Vitamin C imports for India. This significantly mitigates the restrictive effect of AD law. This case study also highlights the possibility of abuse of AD law by the domestic industry unless the national authorities step in to plug the inconsistencies (Gulati et al. 2005).

The effect on Anti-dumping on the consumer welfare through AD-jumping FDI is still under-researched. The paper intends to address this issue both theoretically and empirically.

### SECTION 3 THEORETICAL FRAMEWORK

Using a simple framework, this exercise attempts to examine the implication of AD initiation on the choice of importing and FDI decision of a foreign firm as well as its resultant implication on the domestic and consumer welfare. When the perfect competition prevails in the product markets, the AD initiation would not be an important concern for domestic economy. So, this issue is very much related to the market where competition does not prevail. We consider most simple cases (i.e., monopoly and duopoly case) to examine the implication of strategic anti-dumping initiative on the choice of the foreign firm between importing and FDI. Since the product market competition transmits to the factor market as well, the forms of labour market condition in the domestic economy (e.g., unionized or non-unionized) would also affect the choice. Theoretically, those two things will be handled separately.

#### 3.1 Domestic Economy without union

##### *Monopoly Case:*

Suppose a domestic firm produces a single good as a monopolist. We consider that  $q$  is the output and  $\bar{w}$  is the fixed wage to be paid to the workers. Since, workers receive subsistence wage, the wage bill is simply the product of employment and wage. If the firm faces the demand as  $P = a - q$ , and we can write the profit function of domestic firm:

$$\pi = (a - q - \bar{w})q \quad (1)$$

The firm chooses  $q$  from this equation.

$$q_{MN} = \frac{a - \bar{w}}{2} \quad (2)$$

$$p_{MN} = \frac{a + \bar{w}}{2} \quad (3)$$

Therefore, the profit of the firm and consumer surplus (CS) and domestic welfare can be derived as follows:

$$\pi_{MN} = \left( \frac{a - \bar{w}}{2} \right)^2 \quad (4)$$

$$CS_{MN} = \frac{1}{2} \left( \frac{a - \bar{w}}{2} \right)^2 \quad (5)$$

$$S_{MN} = \frac{3(a - \bar{w})^2}{8} + \frac{\bar{w}(a - \bar{w})}{2} \quad (6)$$

##### *Importing:*

Let us assume that the firm imports to the domestic economy and plays cournot game with the domestic firm. Under the cournot game, the foreign firm imports  $q_2$  and incurs cost  $t$  per unit of production and distribution of the outputs in the domestic economy and there is no

other trade cost in the domestic economy. Given the demand function  $P = a - q; q = q_1 + q_2$ , the domestic and foreign firms respectively supply  $q_1$  and  $q_2$  so that they maximize their respective profits,  $\pi_1 = (a - q_1 - q_2 - \bar{w})q_1$  and  $\pi_2 = (a - q_1 - q_2 - t)q_2$ .

Hence we find,

$$q_{IN1} = \frac{a + t - 2\bar{w}}{3} \quad (7)$$

$$q_{IN2} = \frac{a - 2t + \bar{w}}{3} \quad (8)$$

$$p_{IN} = \frac{a + t + \bar{w}}{3} \quad (9)$$

The foreign firm imports if  $t < \frac{a + \bar{w}}{2}$ . Therefore, the profit of the firm, consumer surplus (CS) and domestic welfare (S) can be derived as follows:

$$\pi_{IN1} = \left( \frac{a + t - 2\bar{w}}{3} \right)^2 \quad (10)$$

$$CS_{IN} = \frac{1}{2} \left( \frac{2a - t - \bar{w}}{3} \right)^2 \quad (11)$$

$$S_{IN} = \left( \frac{a + t - 2\bar{w}}{3} \right)^2 + \frac{1}{2} \left( \frac{2a - t - \bar{w}}{3} \right)^2 + \frac{\bar{w}(a + t - 2\bar{w})}{3} \quad (12)$$

### **FDI:**

If the foreign firm faces anti-dumping measure against importing, the foreign firm might think of investing directly to the economy and use the domestic workers. Then the foreign firm will play cournot game with the domestic firm. If the domestic and foreign firms respectively produce  $q_1$  and  $q_2$  and face demand function  $P = a - q$  (where  $q = q_1 + q_2$ ), the profit functions of domestic and foreign firms are respectively  $\pi_1 = (a - q_1 - q_2 - \bar{w})q_1$  and  $\pi_2 = (a - q_1 - q_2 - \bar{w})q_2$ .

Hence we find,

$$q_{FN1} = q_{FN2} = \frac{a - \bar{w}}{3} \quad (13)$$

$$p_{FN} = \frac{a + 2\bar{w}}{3} \quad (14)$$

Therefore, the profit of the domestic firm, consumer surplus (CS), union utility (U) and domestic welfare (S) can be derived as follows:

$$\pi_{FN1} = \left( \frac{a - \bar{w}}{3} \right)^2 \quad (15)$$

$$CS_{FN} = \frac{2}{9} \left( \frac{a - \bar{w}}{3} \right)^2 \quad (16)$$

$$S_{FN} = \frac{1}{3} (a - \bar{w})^2 \quad (17)$$

**Lemma:** When  $t < \frac{a + \bar{w}}{2}$ , (i)  $\pi_{MN} > \pi_{IN1}$  (ii)  $\pi_{IN1} \geq \pi_{FN1}$  if  $t \geq \bar{w}$  (iii)  $CS_{MN} < CS_{IN1}$  (iv)  $CS_{IN1} \geq CS_{FN1}$  if  $t < \bar{w}$  (v)  $S_{MN} > S_{IN1}$  (vi)  $S_{IN1} \geq S_{FN1}$  if  $t \geq \bar{w}$

Proof: See Above

**Lemma 2:** When  $t < \frac{a + \bar{w}}{2}$ , (i)  $\pi_{FN2} > \pi_{IN2}$  if  $t \geq \bar{w}$

Proof: See Above

**Proposition 1:** In absence of anti-dumping, (i) both profit of domestic producer and total domestic welfare are higher in case of FDI while the domestic consumer prefer foreign imports when  $t > \bar{w}$ . (ii) The foreign firms prefer imports than FDI when  $t > \bar{w}$ .

Proof: See above

**Proposition 2:** The strategic anti-dumping initiative is beneficial for the domestic economy

when the foreign price lies between  $\frac{a + \bar{w}}{2}$  and  $\frac{a + 2\bar{w}}{3}$ , (i) If the foreign firm sells at the domestic economy lower than  $\bar{w}$ , this would be harmful to the domestic economy.

Proof: See above

When the foreign price is higher than the domestic price, the foreign firm cannot import because of threat of anti-dumping. Even, the foreign price lies between monopoly and oligopoly, the firm will be forced to go for FDI. Because, any price in between these two will be unstable because of the presence of competition. FDI would be beneficial because of a rise of consumer surplus as well as employment generation. However, if the foreign firm sells at lower than competitive price (i.e.,  $\bar{w}$ ), the domestic producer will stop production and this will be harmful to the domestic economy.

### 3.2 Domestic Economy with union

If the domestic economy faces trade union, the result could be different. The form of trade union could be two types – centralized and decentralized union.

#### Monopoly Case:

Suppose a domestic firm produces a single good as a monopolist and faces a union in the labour market. We consider that  $q$  is the output and  $w$  is the union wage to be paid to the



union workers. The game is structured as follows: at stage 1 the trade union solves the equilibrium wage and at stage 2, the firm chooses  $q$ . It is solved by backward induction method. If the firm faces demand as  $P = a - q$ , and we can write the profit function of the domestic firm:

$$\pi = (a - q - w)q \quad (18)$$

The firm chooses  $q$  from this equation. If the ‘right-to-manage’ production is the strategy of trade union and one union worker is assumed to be produced one unit of output, the utility function of union can be written as:  $U = (w - \bar{w})q$ .  $\bar{w}$  is minimum wage available in the economy. Substituting  $q$  derived from (18), one would be able to solve  $w$  easily. Therefore, the equilibrium wage, employment and price can be derived as follows:

$$w_{MU} = \frac{a + \bar{w}}{2} \quad (19)$$

$$q_{MU} = \frac{a - \bar{w}}{4} \quad (20)$$

$$p_{MU} = \frac{3a + \bar{w}}{4} \quad (21)$$

Therefore, the profit of the firm, consumer surplus (CS), wage bills (W) and domestic welfare (S) can be derived as follows:

$$\pi_{MU} = \left( \frac{a - \bar{w}}{4} \right)^2 \quad (22)$$

$$CS_{MU} = \frac{1}{2} \left( \frac{a - \bar{w}}{4} \right)^2 \quad (23)$$

$$W_{MU} = \frac{(a + \bar{w})(a - \bar{w})}{16} \quad (24)$$

$$S_{MU} = \frac{(a - \bar{w})(5a - \bar{w})}{32} \quad (25)$$

Let assume that the price of foreign producer in the host country is  $P_F$ . Then, the following statements can be written:

**Lemma 3:** *The foreign firm prefers to import to the domestic economy only when*

$$P_F \leq \frac{3a + \bar{w}}{4} \quad . \text{ (ii) The domestic firm will shut down production when } P_F \leq \bar{w}$$

Proof: When  $P_F > \frac{3a + \bar{w}}{4}$ , no one will buy from foreign importers. In this case, if the foreign firm levies a price below than this, it is subjected to anti-dumping measure. We shall examine in the next section whether the relaxation of such initiative would be beneficial.

On the other hand, when  $P_F \leq \bar{w}$ , the domestic firm will shut down production and the foreign producer would eventually appear as a monopolist in the domestic market.

### Importing:

Let us assume that the firm imports and two options are available for the domestic producers – collude with the foreign importers or play non-cooperative game (i.e., cournot game). Since, sharing of monopoly profit between them cannot be better than the cournot - solution, the domestic firm would not be interested to collude even though the foreign firm would like to do.

Under the cournot game, the foreign firm imports  $q_2$  and incurs cost  $t$  per unit for production and distribution relating to the trade in the domestic economy. Given the demand function  $p = a - q$ , the domestic and foreign firms respectively supply  $q_1$  and  $q_2$  so that they maximize their respective profits,  $\pi_1 = (a - q_1 - q_2 - w)q_1$  and  $\pi_2 = (a - q_1 - q_2 - t)q_2$ .

The union in the domestic economy solves wage in the stage 1 and both firms solves outputs in the next state. The solution involves backward induction method. Hence we find,

$$w_{IW} = \frac{a + t + 2\bar{w}}{4} \quad (26)$$

$$q_{IW1} = \frac{a + t - 2\bar{w}}{6} \quad (27)$$

$$q_{IW2} = \frac{5a - 7t + 2\bar{w}}{12} \quad (28)$$

$$p_{IW} = \frac{5a + 5t + 2\bar{w}}{12} \quad (29)$$

Therefore, the profit of the firms, consumer surplus (CS), union utility (U) and domestic welfare (S) can be derived as follows:

$$\pi_{IW1} = \left( \frac{a + t - 2\bar{w}}{6} \right)^2 \quad \text{and} \quad \pi_{IW2} = \left( \frac{5a - 7t + 2\bar{w}}{12} \right)^2 \quad (30)$$

$$CS_{IW} = \frac{1}{2} \left( \frac{7a - 5t - 2\bar{w}}{12} \right)^2 \quad (31)$$

$$W_{IW} = \frac{(a + t - 2\bar{w})(a + t + 2\bar{w})}{24} \quad (32)$$

$$S_{IW} = \left( \frac{a + t - 2\bar{w}}{6} \right)^2 + \frac{1}{2} \left( \frac{7a - 5t - 2\bar{w}}{12} \right)^2 + \frac{(a + t - 2\bar{w})(a + t + 2\bar{w})}{24} \quad (33)$$

**Lemma 4: (i)** the foreign firm imports if  $t < \frac{5a + 2\bar{w}}{7} (= t^*)$

Proof: See equation (30)

**FDI with Centralised Union:**

If the foreign firm faces anti-dumping initiative against importing, the foreign firm might think of investing to the domestic economy. Then they will play cournot game in the domestic economy. Assume that both firm face union. So, the union will first determine wage and then both firms solve their respective productions. If the domestic and foreign firms respectively produce  $q_1$  and  $q_2$  and face demand function  $P = a - q$  (where  $q = q_1 + q_2$ ), the profit functions of domestic and foreign firms are respectively  $\pi_1 = (a - q_1 - q_2 - w_1)q_1$  and  $\pi_2 = (a - q_1 - q_2 - w_2)q_2$ .

The union in the domestic economy solves wage in the stage 1 and both firms solves outputs in the next state. The solution involves backward induction method. Hence we find,

$$w_{FC} = \frac{a + \bar{w}}{2} \quad (34)$$

$$q_{FC1} = q_{FC2} = \frac{a - \bar{w}}{6} \quad (35)$$

$$p_{FC} = \frac{2a + \bar{w}}{3} \quad (36)$$

Therefore, the profits of the firm, consumer surplus (CS), union utility (U) and domestic welfare (S) can be derived as follows:

$$\pi_{FC} = \pi_{FC1} = \pi_{FC2} = \left(\frac{a - \bar{w}}{6}\right)^2 \quad (37)$$

$$CS_{FC} = \left(\frac{a - \bar{w}}{3}\right)^2 \quad (38)$$

$$W_{FC} = \frac{(a - \bar{w})(a + \bar{w})}{3} \quad (39)$$

$$S_{FC} = \frac{(a - \bar{w})(17a + 7\bar{w})}{36} \quad (40)$$

**FDI with Decentralised Union:**

The respective unions in the domestic economy solve wages decentrally at stage 1 and both firms solve outputs in the next state. The solution involves backward induction method. Hence we find,

$$w_{FD1} = w_{FD2} = \frac{a + 2\bar{w}}{3} \quad (41)$$

$$q_{FD1} = q_{FD2} = \frac{2(a - \bar{w})}{9} \quad (42)$$

$$P_{FD} = \frac{5a + 4\bar{w}}{9} \quad (43)$$

Therefore, the profit of the firm, consumer surplus (CS), union utility (U) and domestic welfare (S) can be derived as follows:

$$\pi_{FD1} = \pi_{FD1} = \left( \frac{2(a - \bar{w})}{9} \right)^2 \quad (44)$$

$$CS_{FD} = \frac{1}{2} \left( \frac{4(a - \bar{w})}{9} \right)^2 \quad (45)$$

$$W_{FC} = \frac{4(a - \bar{w})(a + 2\bar{w})}{27} \quad (46)$$

$$S_{FC} = \frac{4}{27} (a - \bar{w})(2a + \bar{w}) \quad (47)$$

**Lemma 5: When**  $t < t^*$ , **(i)**  $w_{IU} = w_{FC} < w_{MU}$  **(ii)**  $w_{IU} > w_{FD}$  **if**  $\frac{a + 2\bar{w}}{3} < t < \frac{5a + 2\bar{w}}{7}$  **(iii)**  
 $P_{IU} < P_{FD} < P_{FC} < P_{MU}$

Proof: See above

**Lemma 6: When**  $t < t^*$  **(i)**  $q_{IU} < q_{MU}$ , **(ii)**  $q_{IU} < q_{FC}$  **if**  $t > \bar{w}$ , **(iii)**  $q_{IU} < q_{FD}$  **if**  $t > \frac{a + 2\bar{w}}{2}$

Proof: See above

**Lemma 6: When**  $t < t^*$ , **(i)**  $CS_{IU} > CS_{MU}$ , **if**  $t > \bar{w}$  **(ii)**  $CS_{IU} > CS_{FC}$  **if**  $\bar{t} > t > \bar{w}$  **and**  
 $t^* - \bar{t} > 0$  **(iii)**  $CS_{IU} > CS_{FD}$  **if**  $t < \frac{13a + 6\bar{w}}{15}$

Proof: See above

**Lemma 7: When**  $t < t^*$ , **(i)**  $\pi_{IU1} < \pi_{MU}$ , **(ii)**  $\pi_{IU1} < \pi_{FC}$  **if**  $t > \bar{w}$ , **(iii)**  $\pi_{IU1} < \pi_{FD}$  **if**  
 $t > \frac{a + 2\bar{w}}{2}$

Proof: See above

**Lemma 8: When**  $t < t^*$ , **(i)**  $\pi_{IU2} < \pi_{FC}$ , **if**  $t > \frac{3a + 4w}{7}$  **(ii)**  $\pi_{IU2} < \pi_{FD}$  **if**  $t > \frac{a + 2\bar{w}}{2}$

Proof: See above

**Lemma 9: When**  $t < t^*$ , **(i)**  $S_{IU1} < S_{MU}$ , **if**  $t > \frac{3a + 4w}{7}$  **(ii)**  $S_{IU1} < S_{FC}$  **(iii)**

$S_{IU1} \begin{matrix} \geq \\ < \end{matrix} S_{FD}$  **(iv)**  $S_{MU} > S_{FD}$

Proof: See above

**Proposition 3:** *In absence of anti-dumping, when the domestic economy is unionized (i) the foreign firm would prefer to import unless  $t$  is too high (ii) the domestic welfare is not unambiguously higher in case of FDI than importing.*

Proof: See above

**Proposition 4:** *In the presence of union, the strategic dumping cannot unambiguously increase FDI and domestic welfare.*

Proof: See above

In the presence of union, the domestic price would be higher because of higher production cost. This will discourage the foreign firm to FDI compared to importing. Therefore, the strategic dumping would be beneficial or not, even if we ignore consumer surplus, depends on the labour market condition in the domestic economy. The consumer would be really better off in the absence of union. The union raises welfare workers but distorts the consumer interests, making ambiguity of the effect of strategic use of AD initiative.

Given this theoretical backdrop, the paper would like to provide information on the competitiveness in the product market arising out of trade so that one can see the effect of AD initiatives on the consumer welfare in particular. As is discussed in the above, the commodity price and mark-up of the producer have been vital indicators to see any impact on the consumer. Therefore, the paper is set to see any significant on the product prices through changing competition from imports and FDI in response to AD initiations. Before that one should really know the legal provisions of AD initiatives to confer its degree of trade restrictions and likelihood of its impact.

## SECTION 4 ANTI-DUMPING AND LEGAL PROVISION IN INDIA

Although the anti-dumping duty is levied and collected by the Customs Authorities, it is entirely different from the Customs duties not only in concept and substance, but also in purpose and operation (DGAD, 2005). The following are the main differences between the two:

- The object of AD duties is to guard against the situation arising out of unfair trade practices while customs duties are there as a means of raising revenue and for overall development of the economy.
- Customs duties fall in the realm of trade and fiscal policies of the Government while anti dumping and anti subsidy measures are there as trade remedial measures.
- The object of anti dumping and allied duties is to offset the injurious effect of international price discrimination while customs duties have implications for the government revenue and for overall development of the economy.
- Anti-dumping duties are not necessarily in the nature of a tax measure inasmuch as the Authority is empowered to suspend these duties in case of an exporter offering a price undertaking. Thus such measures are not always in the form of duties/tax.

Anti dumping and anti subsidy duties are levied against exporter / country inasmuch as they are country specific and exporter specific as against the customs duties which are general and universally applicable to all imports irrespective of the country of origin and the exporter.

A gamut of reasons can be adduced to dumping – motive of dumper, continuity of dumping, the dumper's cost structure etc. The current classification is based on motive of the dumper. In general, two major grounds for dumping can be traced: those that aim to amass a market share in the export market and those that are based on business reasons – meeting competition in export market or discharging excess capacity. The following reasons are set by the Indian government for the prevalence of dumping.

### ***Dumping for Business Reasons:***

- ***Sporadic (Over-Capacity) Dumping:*** It implies selling products at low prices to dispose excess capacity. A firm releases excess stock in 3 alternatives: disposing off the excess stock in another season, reducing price in standard market to enhance sales and dumping the excess stock in foreign market. Storage expense and possibility of change in consumer tastes renders the 1<sup>st</sup> alternative unattractive. Price reduction in standard market may not be workable as it may be difficult to re-establish the original price after its reduction or due to inelastic demand rendering price reduction ineffective. Thus, the only viable alternative is the 3<sup>rd</sup>, viz; dumping in an international market.
- ***Meeting the Competition:*** In some cases, exporting firms may need to lower their prices in the more contested market of the importing country in order to be able to compete.
- ***Price discrimination (PD) to increase profits:*** For PD to succeed, arbitrage possibility must not exist – i.e. re-exporting products from the less expensive to the more expensive market of the exporter. Market segregation due to high transport costs, different product specifications, demand elasticity and tariffs/non-tariff barriers – is

an important factor in carrying out PD (provided there exists imperfect competition in the home market).

- *Miscellaneous:* Other business reasons may include promotional prices that are associated with entering a new market. Industries characterized by peak demand periods, such as the cut flower industry, often set prices below full cost during down season and above cost during high demand periods.

### ***Strategic Dumping:***

- *Dumping to gain or increase market share:* Firms can deliberately dump their products to gain or increase market share in the importing country's market. In some cases, firms deliberately produce at artificially high capacity to dump excess product in a foreign country. This is different from sporadic dumping as in the 1<sup>st</sup> case. It is distinguishable from predatory pricing in that in gaining market share may be normal method of competition and does not involve gaining dominant market share.
- *Predatory Dumping:* It refers to price discrimination aimed at driving competitors out of market or bringing them to terms. A closed home market or government subsidies may finance the low-priced imports. When competition in the home market is destroyed, the predator then controls the market of the importing country and can reap monopoly profits. In reality, however, predatory dumping is unlikely to occur in practice.

### **Legal Provision:**

Dumping is said to have taken place when an exporter sells a product to the importing country at a price less than the price prevailing in its domestic market. This is an unfair trade practice which can have a distortionary effect on international trade. Anti-dumping is a remedial measure to rectify the situation arising out of the dumping of goods and its trade distortive effect – so as to reestablish fair trade. It provides relief to the domestic industry against the injury caused by dumping.

Dumping thus threatens to cause material injury to the domestic producers of the importing/host country (say here India) and the Designated Authority, Ministry of Commerce initiates investigation and subsequent imposition of anti-dumping duties, although some consumers may benefit from dumping by being able to purchase the dumped 'like product' (the dumped product has a corresponding like-product produced domestically) at rock-bottom prices.

The legal framework of AD is based on *Article VI of GATT 1994, Customs Tariff Act, 1975 - Sec 9A, 9B* (as amended in 1995 and Anti-Dumping Rules [Customs Tariff (Identification, Assessment and Collection of Anti Dumping Duty on Dumped Articles and for Determination of Injury) Rules. Although, the investigations and recommendations with respect to AD is undertaken by the Directorate General of Anti dumping and Allied Duties (DGAD), Ministry of Commerce, headed by the Designated Authority, the imposition and collection is done by the Department of Revenue, Ministry of Finance.

Dumping occurs when the export price of goods imported into India is less than the Normal Value (The price at which like articles are sold in the domestic market of the exporter) of 'like articles' sold in the domestic market of the exporter. Normal value is the comparable price at which the goods under complaint are sold, in the ordinary course of trade, in the domestic market of the exporting country. If the normal value cannot be determined by means of the domestic sales, the following two alternative methods may be employed to

determine the normal value: (i) comparable representative export price to an appropriate third country, and (ii) constructed normal value, i.e. the cost of production in the country of origin with reasonable addition for administrative, selling and general costs and reasonable profits.

The export price of the goods allegedly dumped into India means the price at which it is exported to India. It is generally the CIF value minus the adjustments on account of ocean freight, insurance, commission, etc. so as to arrive at the value at ex-factory level.

The dumping margin is the difference between the Normal value and the export price of the goods under complaint. It is generally expressed as a percentage of the export price. Or,  $\text{Margin of Dumping} = \text{Normal Value of the like article} - \text{Export price of the product}$ . Anti-dumping action can be taken only when there is an Indian Industry producing 'like articles' when compared to the allegedly dumped 'imported products'.

For AD initiations to be filed, a 'causal link' must be established between the material injury suffered by the Indian industry and the dumped imports. The extent of injury may be evaluated in terms of deterioration of certain actual/potential economic indicators of the domestic industry viz. sales, output, profits, market-share, productivity, return on investment, capacity utilization, employment, stocks/inventories, and ability to raise capital/investment and so on.

A dumping investigation can normally be initiated only upon receipt of a written application by or on behalf of the "Domestic Industry" subject to two conditions:

The domestic producers expressly supporting the application must account for: (i) not less than 25% of domestic production of like article, and (ii) more than 50% of total production of like article by those expressly supporting and those opposing the application.

Under Indian laws, GOI imposes AD duty= minimum [Dumping Margin, Injury Margin]. The Designated Authority also calculates the Injury Margin which is the difference between fair selling price due to domestic industry and the landed cost of the product under consideration.

Any exporter whose dumping margin is less than 2% of export price is excluded from AD duties even if existence of dumping, injury and causal link are established. Also, if volume of dumped imports from source country are less than 3% of total imports, provided cumulative imports from all those countries who individually account for less than 3%, are not more than 7%, cannot be penalized with AD duties.

An Application received by the Designated Authority is dealt with in the following manner:

- A. Preliminary Screening:** The application is scrutinized to ensure that it is fully documented and provides sufficient evidence for initiating an investigation. If the evidence is not adequate, then a deficiency letter is issued. Unless the deficiencies are rectified, the submission made before the Authority cannot be construed as an application pending before the Authority.
- B. Initiation:** Designated Authority determines that the application has been made by or on behalf of the Domestic Industry. It also examines the accuracy and adequacy of the evidence provided in the application and when satisfied that there is sufficient evidence regarding dumping, injury and causal link, a public notice is issued initiating an investigation. The Initiation notice will be issued normally within 5 days from the date of receipt of a properly documented application.



- C. Access to Information:** The Authority provides access to the non-confidential evidence presented to it by various interested parties in the form of a public file, which is available for inspection to all interested parties on request after receipt of the responses.
- D. Preliminary Findings:** The Designated Authority will proceed expeditiously with the conduct of the investigation and shall, in appropriate cases, make a preliminary finding containing the detailed information on the main reasons behind the determination. The preliminary finding will normally be made within 60-70 days from the date of initiation.
- E. Provisional Duty:** A provisional duty not exceeding the margin of dumping may be imposed by the Central Government on the basis of the preliminary finding recorded by the Designated Authority. The provisional duty can be imposed only after the expiry of 60 days from the date of initiation of investigation. The provisional duty will remain in force only for a period not exceeding 6 months, extendable to 9 months under certain circumstances.
- F. Oral Evidence & Public Hearing:** Interested parties who participate in the investigations can request the Designated Authority for an opportunity to present the relevant information orally. However, such oral information shall be taken into consideration only when it is subsequently reproduced in writing. The Authority may grant oral hearing anytime during the course of the investigation. Besides the above, the Authority holds a public hearing inviting all interested parties to make their submissions before it. All oral submissions made during the hearing need to be reproduced in writing for the Authority to take the same on board.
- G. Disclosure of information:** Based on these submissions and evidence gathered during the investigation and verification thereof, the Authority will determine the basis of its final findings. However, the Designated Authority will inform all interested parties of the essential facts, which form the basis for its decision before the final finding is made.
- H. Final Determination:** The interested parties submit their response to the disclosure and the final position of the Authority taken therein. The Authority examines these final submissions of the parties and comes out with final findings.
- I. Time-limit for Investigation Process:** Normal time allowed by the statute for conclusion of investigation and submission of final findings is one year from the date of initiation of the investigation. The above period may be extended by the Central Government by 6 months. The anti dumping duty shall remain in force for a period of five years from the date of imposition of duty. However, such duty can be reviewed by the Designated Authority anytime before the expiry of the said period.
- The Authority has the power to review the need for continuation of anti dumping duty. Such a review can be done on the basis of a request received from an interested party in view of the changed circumstances.
  - The review may result in the withdrawal of the duty or in the variation of the duty level depending upon the new circumstances. Generally speaking, an interested party can file a request for review only after a year from the imposition of duty.
  - A review shall follow the same procedure as prescribed for investigation of a fresh case to the extent applicable.

Normally speaking, the Designated Authority initiates the proceedings for anti dumping action on the basis of a petition received from the domestic industry alleging dumping of certain goods and the injury caused to it by such dumping. However, Rule 5(4) of the Anti Dumping Rules provides for **suo-motu** initiation of anti dumping proceedings by the

Designated Authority on the basis of information received from the Collector of Customs appointed under the Customs Act, 1962 or from any other source. Some exceptions to AD duties include products imported by units in EPZs and 100% EOUs, Advance Licence Holders etc.

***Ambiguity in AD Laws:***

Although the anti-dumping laws in India has been quite detailed and to some extent liberal, still it carries some criticisms.

- There is no clear cut method of injury calculation due to dumping. It applies some arbitrary method depending on the case. It is subjected to the judgment of the undertaking officers.
- Consumer welfare has been widely ignored from injury calculation.
- It does not look at the distortionary effect of labour conditions and environmental conditions.
- The existing AD law has some contradictory with the Competition Laws in the country.

## SECTION 5

### ANTI-DUMPING INITIATIVES BY COUNTRY

In view of the various reasons that render dumping lucrative and highly probable, more so, in post WTO era of phased out quantitative restrictions and lowered tariff rates, AD initiations and measures have become the order of the day. Moreover, increased AD activities are being considered by the developing countries too – they are no longer a prerogative of a handful of developed countries like the USA or the EU. In what follows, we shall examine the worldwide AD trends and look specifically at India's relative position.

Let us first look at the pace and pattern of anti-dumping initiatives across countries during 1995-2010. The world economy has been increasingly facing anti-dumping initiatives and while it was 157 in 1995, the number of initiatives reached to a pick of 372 in 2001 and then came down to 170 in 2010 (Table 1). In other words, the number of annual initiatives went upto more than 300 during the early 2000, it accounts for roughly 200 and more. However, the number of initiatives registers a declining trend. This could be considered a partial success of the discussion initiated in the Doha round.

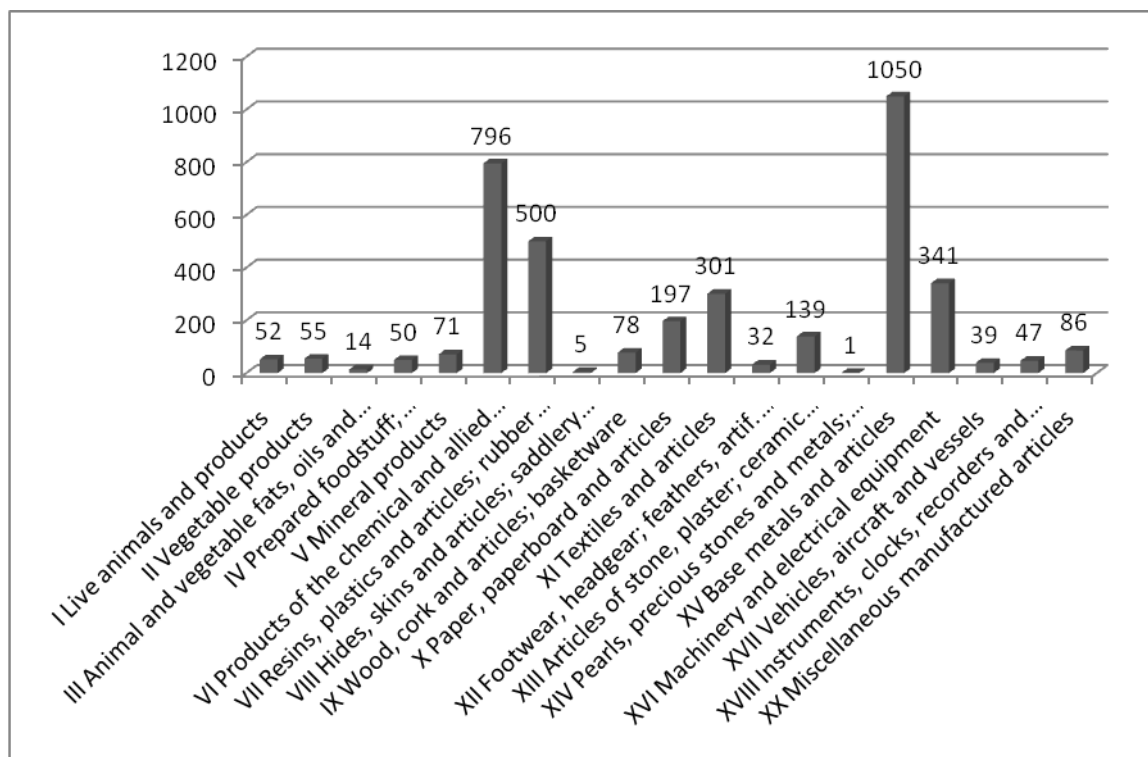
In terms of total figure during 1995-2010, the top ten initiators have been respectively - India, USA, EU, Argentina, Australia, Brazil, South Africa, China, Canada and Turkey. They account for 2914 out of 3854 initiatives, capturing more than three-fourth in the world during the above-mentioned period. It is interesting to be noted that top ten initiators include countries those from both developed and developing countries who have been sharply growing in recent years. Except Russia, all other countries in BRICs have been in the list. Notably, these countries are large in size and they have large domestic demand. Therefore, the countries who are large in size and have strong domestic demand have been frequent users of anti-dumping initiative.

**TABLE 1**  
**Number of AD initiations by the member countries during 1995-2010**

Reporting Member	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
India	6	21	13	28	64	41	79	81	46	21	28	35	47	55	31	41	637
United States	14	22	15	36	47	47	77	35	37	26	12	8	28	16	20	3	443
European Union	33	25	41	22	65	32	28	20	7	30	24	35	9	19	15	15	420
Argentina	27	22	14	8	23	43	28	14	1	12	12	11	8	19	28	14	284
Australia	5	17	44	13	24	15	24	16	8	9	7	11	2	6	9	7	217
Brazil	5	18	11	18	16	11	17	8	4	8	6	12	13	23	9	37	216
South Africa	16	34	23	41	16	21	6	4	8	6	23	3	5	3	3		212
China				3	2	11	14	30	22	27	24	10	4	14	17	8	186
Canada	11	5	14	8	18	21	25	5	15	11	1	7	1	3	6	2	153
Turkey			4	1	8	7	15	18	11	25	12	8	6	23	6	2	146
Sub-group total	117	164	179	178	283	249	313	231	159	175	149	140	123	181	144	129	2914
rest of world	40	62	67	88	75	49	59	84	75	45	52	64	42	32	65	41	940
Total	157	226	246	266	358	298	372	315	234	220	201	204	165	213	209	170	3854

Source: WTO

FIGURE 1  
Number of AD initiations by sectors in the World during 1995-2010



Source: WTO

Let us look at the distribution of AD initiatives by industry types in the world during 1995-2010. Base metals and articles received 1050 number of anti-dumping initiatives which account for almost one-fourth of total initiatives in the world during 1995-2010. Other important sectors which received sufficient number of anti-dumping initiatives have been respectively products of the chemicals and allied products (796); resins, plastics and articles, rubber products (500); machinery and electrical equipments (341). Figures in bracket denote the HS code at the three-digit level. These are mainly chemicals and heavy engineering materials and large items of such sectors are used as intermediate goods. This apart, textile which produce mass consumption goods also received 301 number of AD initiatives during the same period (see Figure 1).

AD initiative sectors in India has been chemicals and allied products (274); resins, plastics and rubber products (94); base metal products (87). Whereas other countries showed a general tendency to impose AD initiatives more on base metals, followed by chemicals and allied products, resins-plastics-rubber products and textiles (see Table 2).

**TABLE 2**  
**Number of AD initiations reported by the member countries for**  
**top ten countries by sectors**

HS Sector	India	United States	European Union	Argentina	Brazil	Australia	South Africa	China	Canada	Turkey	Rest of World
<b>I</b>		15	7	3	5		3	1			20
<b>II</b>		13	3		1	7	2	1	7		22
<b>III</b>	1					2	2				9
<b>IV</b>		8	1	3	1	7		1	9		24
<b>V</b>	9	8	3	1	7	5		4			34
<b>VI</b>	274	65	82	33	41	25	30	105	5	12	144
<b>VII</b>	94	37	35	20	58	62	37	39	2	44	78
<b>VIII</b>			4								1
<b>IX</b>	5	3	9	7	1	7	2		9	6	30
<b>X</b>	14	14	1	13	13	26	17	12	5		82
<b>XI</b>	65	14	43	24	17	7	11	4		39	77
<b>XII</b>	1		9	1	1		1		7		12
<b>XIII</b>	13	4	7	12	7	17	26		3	6	51
<b>XIV</b>											1
<b>XV</b>	87	237	145	81	49	40	58	11	100	23	240
<b>XVI</b>	76	26	57	59	9	7	13	1	3	7	87
<b>XVII</b>	3	5	9	10		4	2	2		1	4
<b>XVIII</b>	3		1	11	4	1	8	5		1	14
<b>XIX</b>											0
<b>XX</b>	2	3	12	10	13	2	1		3	8	32
<b>Total</b>	647	452	428	288	227	219	213	186	153	147	962

Source: WTO

Let us look at the distribution of AD initiatives by country against the exporting countries. Out of 647 AD initiatives, India imposed 144 against the industries from mainland China (22%) and 201 (31%) against the countries including other Chinese parts (e.g., Hong Kong, Taipei). So, a large number of AD initiated by India goes against Chinese products. This is true for other reporting countries as well. Out of 3922, China received 825 (i.e., 21%) from all the countries in the world. So, the immediate question is - why do most of the countries impose AD against Chinese industries? China is highest exported in the world during almost one decade because of producing various competitive goods at cheaper prices. Growth of exports has played a significant role in promoting Chinese growth and therefore, promotion of exports has been important policy to maintain long-term growth. Perhaps, strategic dumpings could be an issue to maintain the growth. Moreover, Chinese firms do not face major labour disputes and strict environmental laws and these have helped to be more competitive in the world market.

**TABLE 3**  
**Distribution of AD initiatives reported by member countries against exporting countries during 1995-2011**

Exporting Country	Reported Country										
	India	United States	European Union	Argentina	Australia	Brazil	South Africa	China	Canada	Turkey	Total
Argentina		5				10	1		1		35
Australia	2	3	2	2		2	5				24
Belgium	2	2			4	3	5	1	2	1	26
Brazil	7	10	4	49	3		9		6	1	112
Canada	5	15	1	1	5	2		1		1	38
China	144	106	102	85	31	48	33		26	58	825
European Union	48			1		5		15		1	85
Hong Kong, China	10		3		1	1	8		1	2	28
India		22	33	10	4	11	21	4	5	9	153
Indonesia	25	18	13	6	21	4	9	5	3	9	161
Iran, Islamic Republic of	13		3		2		1	1		1	22
Japan	32	33	9	4	7	2	1	31	2	2	162
Korea, Republic of	49	30	28	13	22	9	15	31	8	7	278
Malaysia	22	5	17	3	12		8	4	2	6	102
Russian Federation	19	11	19	4	1	5	2	11	5	3	123
Singapore	23	1	2		5		1	6			46
South Africa	10	16	4	10	4	3		1	5		59
Spain	4	8		6	2	4	7		2		47
Taipei, Chinese	47	23	24	11	10	7	11	16	8	9	207
Thailand	37	10	20	5	20	5	5	4	2	10	158
Turkey	6	8	12	2		2	4		3		51
Ukraine	11	7	13	2		1	1	1	4	2	65
United Kingdom	3	5		2	6	6	7	3	3		44
United States	33		14	13	11	33	9	32	17	2	228
Viet Nam	4	4	6	2					3	4	28
<b>Total</b>	<b>647</b>	<b>452</b>	<b>428</b>	<b>288</b>	<b>219</b>	<b>227</b>	<b>213</b>	<b>186</b>	<b>153</b>	<b>147</b>	<b>3922</b>

Source: WTO

Second, another important feature is that 312 of Indian initiatives have been against neighboring countries (including Thailand, Malaysia, Singapore, Viet Nam etc.) which constitutes almost 50% of total initiatives. So, India shows a trend of imposing AD mostly against neighboring countries. This can be also observed Latin American countries where larger share of Argentina's initiatives have been against Brazil. Similarly, China have initiated against Japan and Korea to a large extent. The reason is as follows: a firm would likely to sell at lower cost in the neighbouring country due to low transportation costs when the traditional trade barriers go down. This apart, the relationships between any two neighbouring countries are usually based on political and historical factors. Perhaps, these would explain the more intensive use of unconventional barriers, like AD initiatives, between them to a large extent.

## SECTION 6 ANTI-DUMPING INITIATIVES IN INDIA

During the last two decades, India witnesses gradual removals of trade and industrial restrictions. It was initiated in the late 1980s and pursued vigorously from early 1990s when the country faced severe crisis of foreign exchange reserves coupled with high inflation. The strategy of import substitution pursued during initial year of planning (1950s to early 1980s) had been withdrawn. The tariff rates were very high during pre-1991 and reached at the highest level, accounting more than 100% in the year 1985. Then it declined gradually thereafter to 79.2% in 1991 to 12.5% in 2006. Currently, the average tariff rate has been less than 10%. Similarly, import quotas and limits have almost withdrawn from all economic sectors except exceptional case. The reforms were adopted in intending an improvement of the efficiency, productivity, and competitiveness in the Indian industry. The economy started showing an improvement of the growth sooner after that and has moved from low level to a level closer to two digits. According to World Bank Development Indicator, while GDP grew roughly at 5% during the latter half of 1980s, it reaches upto 9.7% in 2010. Many scholars have shown that this trade liberalization has contributed substantially to the growth process.

On the other hand, the increasing of economic growth coupled with other development programme has contributed to reduce the poverty level in the country substantially. According to the head-count poverty ratio based on the national poverty line, the poverty (both rural and urban) has declined from 45.7% in 1983 to 27.5% in 2004. Per capita GDP has also increased from 264.8 US\$ in 1985 marginally to 318.4 US\$ in 1990 and then sharply to 829.7US\$ 2010 at 2000 base price. This has created huge additional demand in the economy and this addition from large populated country has essentially attracted international producers and traders.

One of the critical problems discussed by many scholars even within this success is that the country does not register a notable growth of gainful and decent employment. The economic growth without much employment in the formal sector is defined as 'jobless growth' phenomenon in India (Nagaraj, 2004) and has been causing a threat of its sustainability. The contribution of secondary sector in the GDP has been still low and has gone up marginally from 26.1% in 1985 to 28.4% in 2010. According to the Census data, the work participation rate was very poor registering 32.1% in 1980 and then it has increased marginally to 39.1 in 2001 including all forms of employment. The growth of formal employment has been less than one percent during the last two decades. This poses a question of sustainability of the growth. We need to look at the issue of anti-dumping strategy from this perspective.

Since India stands on the top of the number of AD initiatives, one should look at its distribution over industries and resultant impact of trade and industrial dynamics. The Table 4 lists AD initiations by products according to HS classifications. The highest number of AD initiations have been concentrated in Sectors VI (Products of the chemicals and allied industries), followed by Sector XV (Base Metals and Articles of Base Metals) , VII (Resins, Plastics and articles, Rubber & articles), XVI (Machinery and electrical equipment). Products of the chemicals and base metals account for more than 60% of total antidumping.

**TABLE 4**  
**Number of AD Initiatives by sectors in India during 1993-2010**

HS Code	Product Names	Number	%
Section I	Live Animals, Animals Products	0	0.0
Section II	Vegetables Products	0	0.0
Section III	Animal or Vegetable Fats and Oils and their cleavage Products; Prepared Edible fats; animal or Vegetable waxes	0	0.0
Section IV	Prepared Foodstuffs; Beverages, Spirits and Vinegar; Tobacco and Manufactured Tobacco substitutes	8	1.5
Section V	Mineral Products	8	1.5
Section VI	Products of the Chemicals or Allied Industries	176	34.0
Section VII	Plastics and Articles thereof; Rubber and Articles Thereof	59	11.4
Section VIII	Raw Hides and Skins, Leather, Furskins and Articles thereof; saddlery and Harness; travel goods, Handbags and similar Containers; Articles of animal gut (other than silk-worm Gut)	0	0.0
Section IX	Wood and Articles of Wood; Wood Charcoal; cork and articles or cork; Manufactures of Straw, of Esparto or of other Plaiting Materials; Basketware and Wickerwork	0	0.0
Section X	Pulp of wood or of other Fibrous Cellulosic Material; Recovered (Waste and Scrap) Paper or Paperboard; Paper And Paperboard and articles thereof	14	2.7
Section XI	Textile and Textile Articles	47	9.1
Section 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	2	0.4
Section XIII	Articles of Stone, Plaster, Cement, Asbestos, Mica or similar Materials; Ceramic Products; Glass and Glassware	8	1.5
Section XIV	Natural or Cultured Pearls, Precious or Semi-Precious Stones, Precious Metals, Metals clad with Precious Metal, and articles thereof; Imitation Jewellery; Coin	0	0.0
Section XV	Base Metals and Articles of Base Metal	137	26.5
Section XVI	Machinery and Mechanical Appliances; Electrical Equipment; Parts thereof; sound Recorders and Reproducers, Television Image and Sound Recorders and reproducers, Television Image and sound Recorders and Reproducers, and Parts and Accessories of such article	54	10.4
Section XVII	Vehicles, Aircraft, Vessels and Associated Transport Equipment	0	0.0
Section XVIII	Optical, Photographic, Cinematographic, measuring, checking, precision, medical or surgical Instruments and apparatus; clocks and watches; musical instruments; part and accessories thereof	3	0.6
Section XIX	Arms and Ammunition; Parts and Accessories thereof	0	0.0
Section XX	Miscellaneous Manufactured Articles	0	0.0
Section XXI	Works of art, Collectors' Pieces and Antiques	1	0.2
Total		517	100.0

Source: GAD IND-AD, World Bank

Now, it is important to investigate the impact of AD initiative on trade flow. At first, one should look at the Intra-industry trade share which will essentially report us the international competitiveness. IIT is the part of total trade in the product (exports and imports) that is not net trade, i.e.

$$IIT = (X + M) - |X - M| \quad (3)$$

Where  $X$  is the value of exports of the products and  $M$  is the value of imports of the same products. For the same inter-industry and inter-country comparison, one needs to derive the index in relative terms. One way is to measure the relative importance of IIT, as a share of total trade:



$$IIT\ Share = \frac{IIT}{Total\ Share} = \frac{(X+M)-|X-M|}{(X+M)} \quad (4)$$

The value of the index lies between 0 to 1. If it is 0, the intra-industry trade is assumed to be nil. If it is 1, intra-industry trade is assumed to be highest. The value of IIT share has been presented in Table 5. As one moves down, the industries would be seen as less AD-prone. It suggests that the industries in the 10 rows account for higher value of share as well as shows a general trend of rising intra-industry trade. In general, IIT share registers both rising and declining trend within six years from 1998-99 to 2003-04 for the AD prone 12 industries. Therefore, we cannot conclude that the international competition of these AD-intensive industries has declined (see Table 5).

TABLE 5  
Intra-Industry Trade Share by commodities

NIC Code		1998-99	2003-04
241	Basic chemicals	0.62371	0.863603
242	Other chemical products	0.759175	0.657015
271	Basic Iron & Steel	0.887778	0.651687
251	Rubber products	0.626278	0.576279
252	Plastic Products	0.664881	0.792334
331	Medical appliances	0.335166	0.402372
281	Structural metal products	0.644246	0.601712
289	Other stream generators	0.644246	0.601712
311	Electric Motor, generators and transformers	0.487525	0.363632
291	General purpose machinery	0.404069	0.515835
171	Spinning and weaving textiles	0.188081	0.368282

Source: ASI, CSO

One of the intension behind the AD initiatives has been to restrict import competition. Let us now look at growth of imports and exports of the AD intensive industries. The data has been taken from Nicita and Olarreaga (2006) and the exponential growth rate has been calculated from the figures by using physical quantity of imports and exports. The imports including all commodities have grown at 15% per annum and the same from AD intensive (except three items) has increased at higher than this rate. So, AD has not made any significantly adverse effect on the import. The growth of imports from import-competing sector should be higher than the same for export competing sectors. Moreover, the growth of imports can be explained by the increase of demand or fall of import prices. The growth of unit value of imports has dropped for some commodities but increased for others. On an average, the unit value of AD intensive imports has declined while this has increased for all commodities during 1998-2004. But, none of them are statistically significant. Still one can infer that the unit value of imports under AD intensive category seems to be declining. This does mean that the consumer would be better off. Because many of those importable items are used as intermediate goods and hence it would not necessarily be reflected in the consumer price index.

TABLE 6  
Growth of imports during 1998-2005

NIC Code	Import	Export	Imp_UV
241	2.46	15.3**	8.62
242	9.89*	18.2**	0.02
271	13.6*	27.4**	0.78
251	27.9**	20.3**	-16.03
252	12.3*	15.4**	2.71
331	39.1**	21.3*	-7.46
281	20.6	-4.7	-5.75
289	18.3**	-0.99	-7.22
31	17.9**	19.8**	4.63
291	19.9**	25.1**	-5.45
17	22.4**	17.6**	-2.35
Group Average	18.6	15.9	-2.5
All commodities	15**	18.1**	2.6

Source: Nicita and Olarreaga (2007)

Let us now look at the price movement of AD intensive commodities items relative to the overall price indices (combining all commodities). The relative price of AD intensive commodities registers a rising trend during 1994-2010 for four categories - Base metals and articles, Products of the chemical and allied industries, Cement and Gypsum Products, Resins, plastics and articles; rubber and articles (see Table 7). The prices of machinery and electrical equipment as well as Textiles and articles have been, though lower than the overall price indices, shown increasing trends. Therefore, the consumer surplus would essentially be lower in the AD intensive commodities.

**TABLE 7**  
**Relative price compared to overall price by AD initiative sector**

Sector	1994-95	1999-2000	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Base metals and articles	0.99	0.91	0.89	0.87	0.87	1.00	1.08	1.11	1.13	1.16	1.22	1.07	1.06
Products of the chemical and allied industries	0.96	0.90	0.87	0.85	0.87	1.05	1.16	1.18	1.15	1.19	1.31	1.09	1.08
Cement and Gypsum Products	0.96	0.90	0.86	0.85	0.87	1.12	1.24	1.27	1.23	1.30	1.43	1.13	1.11
Resins, plastics and articles; rubber and articles	0.97	0.96	0.94	0.91	0.90	0.98	1.14	1.18	1.11	1.14	1.29	1.06	0.98
Machinery and electrical equipment	0.96	0.85	0.86	0.82	0.84	0.92	1.00	0.99	0.99	0.99	1.08	0.88	0.83
Textiles and articles	0.88	0.89	0.84	0.82	0.79	0.88	0.96	0.94	0.72	0.72	0.68	0.93	0.99
Paper, paperboard and articles	1.12	1.01	1.01	1.00	0.94	0.94	0.92	1.00	1.26	1.22	1.06	1.03	0.99
Articles of stone, plaster; ceramic prod.; glass	1.13	1.10	1.13	1.12	1.07	1.05	1.04	1.08	1.23	1.15	1.05	0.97	0.92
Mineral products	1.10	0.88	0.83	0.83	0.77	0.79	0.76	0.89	1.29	1.33	1.08	0.98	0.95
ALL	1	1	1	1	1	1	1	1	1	1	1	1	1

Source: Monthly Bulletin, Reserve Bank of India

Let us now move on to see the FDI flow in the AD initiative sector. Recently, NCAER (2010) has compiled a detailed report on FDI flows to India. According to the report, the FDI flows have been still low and it is even less than two percent of total investment. FDI flows have been fluctuating substantially in all sectors but seem to be declining only in paper, paper board and articles. Otherwise, all the AD intensive sectors (e.g., products of chemicals and allied industries, cement products, base metal products and resins, plastics and rubber products, and machinery equipments), shown in first four columns in Table 8, register a rising trend on an average during 2000-2006. Mechanical and electrical equipments sector has been largest recipients of FDI. It has been more than double in these four categories. It is clearer when the FDI flow has been presented in percentage shares. The FDI share in chemicals and allied industries has increased from 8.7% in 2000 to 21.9% in 2004 and then dropped to 10.7% in 2006. But, on an average it registers an increasing trend during this period. This is also true for other three AD intensive sectors. The flow in resins, plastic and rubber products have been relative low in terms of percentage share but still rising in absolute term. The share of flow in machinery and electrical equipments sector has increased from 28.5% in 2000 to sharply 44.2% in 2006. Therefore, AD initiative might have pushed up the FDI in these sectors.

TABLE 8  
FDI by sector (real, at 1993-94 prices)

Sector	2000	2001	2002	2003	2004	2005	2006
Products of the chemical and allied industries	114.7	129.9	125.0	82.2	293.8	138.0	301.8
Cement and Gypsum Products	46.4	85.5	13.3	5.3	0.1	230.9	101.5
Base metals and articles	11.1	23.6	33.3	22.2	130.3	84.4	101.8
Resins, plastics and articles; rubber and articles	2.4	0.4	26.9	10.1	23.4	17.5	8.9
Machinery and electrical equipment	376.0	537.0	684.6	375.4	566.5	734.7	1245.1
Textiles and articles	1.2	2.8	26.6	10.1	20.7	40.3	56.9
Paper, paperboard and articles	38.0	6.9	6.8	4.4	2.2	17.3	3.7
Articles of stone, plaster; ceramic prod.; glass	22.5	6.9	26.2	3.8	19.0	48.2	23.0
Miscellaneous manufactured articles	582.7	314.2	147.4	172.8	151.1	202.7	803.1
Mineral products	70.7	239.4	375.8	89.6	83.0	32.0	125.7
Group Total	1265.7	1346.5	1465.9	776.1	1290.0	1545.9	2771.5

Source: NCAER Report (2010)

TABLE 9  
Distribution of FDI by AD initiative Sector

Sector	2000	2001	2002	2003	2004	2005	2006
Products of the chemical and allied industries	8.7	9.3	7.8	10.0	21.9	8.2	10.7
Cement and Gypsum Products	3.5	6.1	0.8	0.6	0.0	13.7	3.6
Base metals and articles	0.8	1.7	2.1	2.7	9.7	5.0	3.6
Resins, plastics and articles; rubber and articles	0.2	0.0	1.7	1.2	1.7	1.0	0.3
Machinery and electrical equipment	28.5	38.4	43.0	45.5	42.2	43.7	44.2
Textiles and articles	0.1	0.2	1.7	1.2	1.5	2.4	2.0
Paper, paperboard and articles	2.9	0.5	0.4	0.5	0.2	1.0	0.1
Articles of stone, plaster; ceramic prod.; glass	1.7	0.5	1.6	0.5	1.4	2.9	0.8
Miscellaneous manufactured articles	44.2	22.5	9.3	21.0	11.3	12.1	28.5
Mineral products	5.4	17.1	23.6	10.9	6.2	1.9	4.5

Source: NCAER Report (2010)

The growth of imports and FDI cannot be explained as in response to AD initiations. Because, these could grow simply due to income growth. Without controlling the income and demand effects, one cannot clearly infer the role of AD on imports and FDI. However, any change due to either imports or FDI must have implication on the competition and resultant mark-up of the commodities. We are now interested to see the mark-up of the industries in AD intensive industries. AD initiatives provide some market power to the existing domestic producers. At the same time, AD jumping FDI can also limit the power. It is now important task to derive the market power of the AD intensive industries compared to all industries. Using a standard production function, the market power can be easily derived without having price information (Abraham et al., 2007; Maiti, 2012). Assume that labour (L) and Capital (K) jointly determine output (Y) using Cobb-Douglas production function. With some manipulation, it can be presented into a form of regression equation in such a way, one would be able to derive market power of the concerned industries for a given time period (see Appendix). So, our basic regression equation for  $i$ -th industry,  $j$ -th states and  $t$ -th years could be written as below:

$$SR_{ijt} = \beta LER_{ijt} + \gamma k_{ijt} + \eta BAR_{ijt} + w_{ijt} + u_{ijt} \quad (48)$$

$$\text{Where, } \gamma = \frac{\lambda}{\mu} \text{ and } \eta = \frac{\theta}{1-\theta}$$

Where,  $SR = (q - k) - s_L(l - k)$ ,  $LER = (q - k)$ ,  $BAR = (s_L - 1)(l - k)$ , SR is simply defined as Solow residuals and must be influenced by the market power of producers in one industry. It is expected that SR would rise with an increase of market power. The estimated coefficient

of *LER* variable will account for the degree of the power. Here  $\beta = (p - MC) / P = 1 - (1 / \mu)$  is the Lerner index. Since  $\mu$  and  $\beta$  are directly related, *SR* should rise with a rise of *LER*, if  $\beta$  is positive. Therefore,  $\mu$  is equal to the ratio of price to marginal cost.  $w_{ijt}$  is the TFP and  $u_{ijt}$  is the random disturbance term. *SR* could also be influenced by the bargaining power of workers in the industry and one needs to control this factor before estimating marketing power of the producers. The coefficient of *BAR* would essentially capture the bargaining power of the workers. Moreover, this expression is a bit different from the one which is used both in Olley and Pakes (1996) and Levinshion and Petrin (2003). However, they can be applied with a minor modification.

The estimation of the parameters in the above equation would not be straight-forward. In principle, both pooled and fixed effect panel regressions can be run to estimate the parameters, but they are often criticised on endogeneity ground. Firms usually observe a part of productivity before hand and hence adjust the factor of production accordingly. This raises the problem of simultaneity, and the residual term and the variable factor inputs seem to be correlated. Hence, it violates the basic requirement of Ordinary Least Square method. At first, Olley and Pakes (1996) raised these issues and offered alternative method of estimation. Then, Levinshion and Petrin (2003) revised this further. Olley Pakes (1996) developed a consistent semi-parametric estimator to fix the problem where they used firm level investment decision to proxy unobserved productivity shocks. Though Olley-Pakes approach has the clear advantage of easy implementation it also has a potential drawback in the cases where firms report zero investment. Due to the invertibility condition, investment proxy is valid only for non- zero investment. Pronounced adjustment costs force most firms in developing countries like India, Turkey, Columbia, Mexico and Indonesia to report zero investment costs. Levinsohn and Petrin (2003) argue that intermediate inputs also adjust to productivity shocks and are more flexible than investment. The advantage of non-zero level of intermediate inputs also adds to the cause, because firms generally do not report zero level of intermediate input usage. Since our database includes three digits industry information, the present study can run both methods. We create dummy for those whose profit are negative or zero in order to run Olley-Pakes method. Moreover, we consider gross fixed capital formation in Olley-Pakes regressions and both material and fuel cost as proxies in Levinsohn-Petrin regressions to deal with the endogeneity problem.

We run (48) by using difference form so that fixed effects are eliminated easily. After running the regression, the mark-up ( $\mu$ ) has been estimated from the estimated coefficient of *LER* for respective industries. The figures are then presented in column 1 of Table 10. The overall mark-up of Indian industries has been 1.62 and it means that the mark-up of industrial products is on an average 1.62 times of marginal cost of production. Similarly, if we look at the value of estimated mark-up for AD-prone industries, all register more than one and reveals that they have sufficient market power. Interestingly, except for 242 and 289 the market power of other AD intensive industries are found to be lower than the overall mark-up of Indian industries. Therefore, one cannot infer that the imposition of AD yields a greater market power of AD intensive goods. Because, AD imposition would definitely keep market power of the existing domestic industries at the higher level, and at the same time, pushes up the FDI flow, leading to a decline of the same. So, the net effect would yield a moderate market power.

Since entry and employment generation in the formal industrial sector have been most serious problem in the recent past, we should examine whether AD initiation has effectively created an entry barrier and thereby limited the employment generation. Annual average entry rate

and employment growth have been respectively 1.24% and 3.20% during 1998-2005. Still, except for four industry groups, the entry has been positive and growth rate of some of them shows a higher figure than the overall growth. Similarly, the employment growth of AD intensive industries has been positive (except three groups) and it is higher in six industry groups than the average. Apart from the individual demand factor, AD initiation could have helped to promote employment through domestic entry and FDI flow.

TABLE 10  
**Producer's Mark-up and Employment in AD intensive sectors in India**

NIC Code	Mark-up 1998- 2005	Factory		Workers		Annual Growth (%), 1998-2007	
		1998	2007	1998	2007	Factory	Workers
241	1.09	3009	2922	151541	140368	-0.32	-0.82
242	2.36*	7515	8209	343748	457571	1.03	3.68
271	1.44*	3725	4098	324007	435950	1.11	3.84
251	1.46	2012	2068	93491	103663	0.31	1.21
252	1.71**	4522	6123	103288	172208	3.93	7.41
331	1.44	696	737	28251	41529	0.65	5.22
281	1.44	2361	2901	79021	126260	2.54	6.64
289	1.76**	5518	6972	117144	247616	2.93	12.38
311	1.61**	1293	1144	61923	73815	-1.28	2.13
291	1.36	4323	4149	198127	165773	-0.45	-1.81
171	1.53	10339	9047	1029018	952234	-1.39	-0.83
Subgroup Total		45313	48370	2529559	2916987	0.75	1.72
Subgroup Average	1.39	-	-	-	-	-	-
All	1.62	131706	146385	6364464	8198110	1.24	3.20

Source: ASI, CSO

## SECTION 7 ANTI-DUMPING INITIATIVES IN INDIA

Since the above-analysis was based on three-digit industry-level, firm level information would check robustness of the results. The database used for the purpose of analysis is CAPITALINE. We have used company level data for 39 firms in the chemical and petrochemical industry for the years 1997 – 2009. Our dataset constitutes an unbalanced panel with 149 observations.

The CAPITALINE dataset is beset with some serious problems

- it is not exhaustive in the sense that only a small subset of firms within an industry report their variables every year and the sample of such firms doing so is also smaller than the PROWESS database that reports firm-level data.
- it is not able to provide balanced panel information. These are very large number of missing observations in the data used for analysis.

Notwithstanding these limitations we make an attempt to capture the disaggregated company-level details to draw meaningful patterns and useful insights into firm dynamics as a result of AD actions.

Thus, a 13 year time-period with 39 firms in the chemical industry have been included in our panel data analysis to assess the impact of constructed AD variables (dummies) on the Chemicals & Petrochemical Industries. The reason for selecting Chemicals and Petrochemical Industry was because it was the dominant industry in which the largest number of AD duties had been levied. Moreover, the industry has performed excellent growth during last two decades in India. According to a report published by Gupta and Goldar (2010) on R&D, it registers a higher figure than European firms.

### *Anti-Dumping Variables*

We have constructed anti-dumping (AD) variables to assess the impact of AD initiations on firm behavior. AD takes values from 0 to 6 – it captures the cumulative time-effect of AD initiation(s) by firm(s) – those firms in the industry who do not get AD protection are given the value 0 and those who get protection get non-zero values, cumulating overtime, taking value 1 in the year of initiation, 2 in the year when the next AD initiation is filed and so on. WPI Series (base 1993-94) for chemicals have been used as deflator for the calculation of real values.

### *Methodology:*

The panel-regressions are run and we use the method of Arellano-Bond dynamic panel-data estimation:

$$\Delta Y_{it} = \alpha + \beta \Delta Y_{it-1} + \gamma \Delta X_{it} + u_{it}$$

**Real imports:** Nominal total imports = Import of raw materials - CIF + Import of stores & spares + Import of finished goods + Other imports. Real Imports = Nominal total imports / WPI Series (base 1993-94) for chemicals. When we regression AD on real imports, we find that there exists a positive and significant relation between AD filings and the level of real imports of the industry filing for AD. This is observed after controlling for FDI and real investment respectively. So, AD initiation does not affect the import.



TABLE 11  
**Growth of imports, FDI, R&D and TFP in chemical industries in India during 1997-2009**

Independent Variables	ln Real Imports	FDI	R&D	TFP
AD	0.285***	0.03	0.033	0.191

*Note: \*\*\*represents significant at 5% level; Arellano-Bond dynamic panel-data estimation (GMM estimation method)*

Let us move on to FDI flow. The variable taken as a proxy for FDI is % Equity Holding (Foreign (Promoter & Group) in the firm in a given year. Our regression results show that there exists a positive and insignificant impact of AD on FDI in the industry. One of the reasons for not getting significant result is that the number of observations is low and it carries a lot of missing value over the years.

Similar results have also been found when R&D<sup>1</sup> and TFP have been regressed.

Research & Development is the total R&D expenditure as percentage of net turnover (%)

Total factor Productivity (TFP) has been derived from this formula. We use the following variables to compute the TFP of each firm in each year:

$$TFP = \ln GVA - (\text{share of labor}) * \ln L - (\text{share of capital}) * \ln K$$

where share of labor = Employee Cost/ GVA

We find positive but insignificant impact of AD on R&D and TFP. So, one can firmly infer that AD has not been conducive for R&D and productivity growth.

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<sup>1</sup> Usually it is assumed that the competition increases the incentives for R&D and thereby raises the productivity growth. At the same, it should be remember that too much could be harmful. Aghion et al. (2007) established an inverted-U relationship between competition and innovation.

## SECTION 8 SUMMARY AND CONCLUSIONS

Consecutive multilateral negotiations at the level of the WTO have resulted in the reduction of import tariffs, but not much initiative has been directed toward non-tariff barriers. Moreover, recent trends in the usage of unfair trade laws indicate that they are being used more frequently, by more countries, and against more products. Antidumping (henceforth, AD) is the most popular trade defense instrument, now being increasingly used by countries to protect their producers from supposedly unfair competition. Theoretically, it is shown that strategic use of anti-dumping initiative could be beneficial for the domestic economy by drawing foreign direct investment. But, this depends on the labour market conditions within the economy.

- India files the largest number of AD initiations in the world in the recent past and there is a large concentration of these initiations and measures in certain industries over some others- the most important of which is the chemicals and petrochemicals industries. Almost 50% of AD initiatives have gone against China and other neighbouring countries. In this paper, we made a modest attempt to study the impact of AD filings by firms. We have not found notable impact of AD initiatives on imports. It might have positive impact on FDI. Even then the AD intensive industries carry higher price with substantial market-power. Because, FDI flows have been still very low. Firm level study also shows modest impact of AD on the chemical industry on certain variables of interest. Notwithstanding the data problems, we, however, find that AD in general does not act adversely on imports, R&D and TFP of the chemical industry. Rather, the effect of AD on FDI seems to be positive. However, when we look at the product market prices and mark-up of the AD-intensive industries at the three-digit level, it seems to be showing a high in the economy. Obviously, this does not help to rise consumer benefits.
- From a policy point of view, however, one needs to look at the stupendous surge in AD initiations with some caution. It is true that AD may enhance the protection received by the domestic industry and increase the latter's profits. Indiscriminate use of such protective instruments engenders perverse incentives for domestic producers to undertake lesser and lesser innovations and R&D in their production trajectories.

### **Policy Suggestions:**

- In general, AD is anti-competitive and has distortions on consumer. But, strategic use of such initiative could be beneficial for the domestic economy by drawing foreign direct investment in some situations.
- Any unfair policy on competition should not be supported and it must have other retaliation effect on federal democratic country like India. For example, a regional government might tempt to protect the local producers on similar analogy.
- AD provides protection to the small group of industries in the formal sector. More than 90% industries in the informal sector are almost out of this coverage. Even if, the laws do not preclude them from AD petition, the minimum requirements for filling cannot be fulfilled due to lack of their organizational networks.
- Injury investigation seems to be arbitrary and un-scientific. Investigation process of injury calculation does not account for environmental damage, consumer surplus and workers welfare.

- The government should clearly spell out the methods of injury calculation. Although it could vary case to case, but there has to have common minimum uniform methods of injury calculations in order to avoid arbitrariness.
- Since a large number of AD initiatives has been against China, it definitely raises an issue of fair competition. Since many goods originated in China are being imported to India through neighbouring countries it raises an issue of rules of origin while investigating the foreign prices. China still does not follow market rule in various aspects of economic relation and the fair competition is really an issue when a country faces a cheaper commodity originated from non-competitive environment. Therefore, injury calculation should also count the cost of production in the foreign country before imposing AD duties. AD laws cannot be withdrawn fully. Rather the use of such restrictions should be limited. However, safeguard policy is used before considering AD initiation.
- Thus, the government needs to strike a balance between protecting the interests of the domestic producers on one hand and encouraging indiscriminate initiations of AD filings to appease some pressure groups and lobbies and create vested interests. Too much of such protection, might go against the economic interest of the nation and dampen the economy's optimistic and dynamic growth phenomenon.

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## APPENDIX

A standard benchmark model with two production factors, labour and capital, is widely used in the literature. Let us consider a production function where value added  $Q_{ijt}$  of firm  $i$  in  $j$ -th region and year  $t$  is produced using two inputs, namely labour  $L$  and capital  $K$ . Ignoring subscript, it can be written as follows :

$$Q = AF(L, K) \quad (1)$$

If the production function is homogeneous of degree  $1+\lambda$  for all input factors, the returns to scale would be  $1+\lambda$ . It would then exhibit respectively decreasing ( $\lambda < 0$ ), constant ( $\lambda = 0$ ) or increasing ( $\lambda > 0$ ) returns to scale. By taking a total differential of (1) and logarithmic values we get:

$$(q - k) - \varepsilon_L(l - k) = \lambda k + a \quad (2)$$

The left-hand expression in (2) represents the change in output-capital ratio minus the product of labour elasticity and change in labour capital ratio. This essentially captures the residual growth which depends on capital growth explaining returns to scale ( $\lambda k$ ) and unexplained random term ( $a$ ). In practice, it is really difficult to estimate the factor elasticity and hence factor share is used as proxy.

### ***Perfect Competition in both Product and Factor Markets***

Let us assume that the perfect competition prevails both in product and labour market. Under such situation, the wage is paid according to their value of marginal production, i.e.,  $w = VMP_L$ . The  $VMP_L$  is further the product of market price of output and marginal product of labour, i.e.,  $w = P.MP_L$ . Now, re-arranging and substituting the terms, we get that  $\varepsilon_L = s_L$ . In other word, the factor elasticity is exactly equal to the factor share only when the perfect competition prevails both in the product and labour market. Then, we get

$$(q - k) - s_L(l - k) = \lambda k + a \quad (3)$$

Where  $SR = (q - k) - s_L(l - k)$ . It is really difficult to find out a true perfectly competitive market in practice, particularly in organised industrial sector.

### ***3.2 Imperfect Product Market***

Let us assume that the product market is non-competitive. Then the price would be higher than that of competitive market by the degree of mark-up on the marginal cost (i.e., competitive price) and the wage is paid according to their marginal revenue product, i.e.,  $w = MRP_L$  and the  $MRP_L$  is the product of marginal revenue and marginal physical product, i.e.,  $MRP_L = MR.MPP_L$  where  $MR = MC < P$ . If  $\mu = P/MC$  or mark-up levied on the top of marginal cost for one unit of production and  $s_L$  is the cost share of labour, the labour elasticity is the product of mark-up and the labour share, i.e.,  $\varepsilon_L = \mu s_L$ . Therefore, the labour share would be lower than the earlier one and the residual growth would be higher. Assuming  $\varepsilon_L + \varepsilon_K = 1 + \lambda$  and by substituting them in (2), we get

$$(q - k) - s_L(l - k) = \beta(q - k) + \lambda k + (1 - \beta)a \quad (4)$$

Or,  $SR = \beta LER + \lambda k + (1 - \beta)a$ , where  $LER = (q - k)$ ,  $\beta = (p - MC)/P = 1 - (1/\mu)$  is the Lerner index. Since  $\mu$  and  $\beta$  are directly related,  $SR$  should rise with a rise of  $LER$ , if  $\beta$  is positive. Now, we can easily run the regression to get the parameters of market power and productivity growth, without using any price information.

### 3.3 Imperfect Product and Labour Markets

If the trade union determines wage in the labour market, it must be higher than the competitive one and the labour share would be different from its elasticity. Let us assume that the product market imperfection exists as before and an union works in the labour market now.

Let us assume that  $\bar{L}$  is the total workers available in the economy,  $w_0$  is the alternative wage for workers outside the firm and  $\theta$  is the bargaining power of the union, the wage can be derived from the following Nash bargaining equation,

$$\max_{w,L} \Omega = (Lw + (\bar{L} - L)w_a - \bar{L}w_a)^\theta (PQ - wL)^{1-\theta} \quad (5)$$

Solving (5) with respect to  $w$  and  $L$ , we can derive with some manipulation

$$\varepsilon_L = \mu s_L + \mu(s_L - 1)\theta/(1 - \theta) \quad (6)$$

It is interesting to note that in the presence of trade union the labour elasticity would consist of an additional term in order to relate with factor share. The first term in the right-hand side in (6) is similar to the previous one because of the product market imperfection only and the second term captures additional rent drawn from the surplus by the union. Higher the  $\theta$ , the higher would be wage bills and the labour share. In other words, in the presence of labour union,  $SR$  will be lower with the higher wage rent. This additional term should essentially be brought into the regression equation and combining (4) and (6), we find that

$$(q - k) - s_L(l - k) = \beta(q - k) + \frac{\lambda}{\mu}k + \frac{\theta}{1 - \theta}(s_L - 1)(l - k) + (1 - \beta)a \quad (7)$$

Or,  $SL = \beta LER + \frac{\lambda}{\mu}k + \frac{\theta}{1 - \theta}BAR + (1 - \beta)a$ , where,  $BAR = (s_L - 1)(l - k)$  and it rises if either the labour share or employment increase. The expression (7) is our basic equation to be used in the further analysis and allows us to estimate market and union bargaining power simultaneously without the information on market price and the alternative wage.

### Econometric Method

Following the expression (7), our basic regression equation for  $i$ -th industry,  $j$ -th states and  $t$ -th years could be written as below:

$$SR_{ijt} = \beta LER_{ijt} + \gamma k_{ijt} + \eta BAR_{ijt} + w_{ijt} + u_{ijt} \quad (8)$$

Where,  $\gamma = \frac{\lambda}{\mu}$  and  $\eta = \frac{\theta}{1 - \theta}$

Where,  $w_{ijt}$  is the modified TFP and  $u_{ijt}$  is the random disturbance term. We define that the modified total factor productivity will be free from all market imperfections and one can



easily estimate the extent of market distortions. Moreover, this expression is a bit different from the one which is used both in Olley and Pakes (1996) and Levinshion and Petrin (2003). However, they can be applies with a minor modification.

The estimation procedure of productivity growth using both approaches involves two steps to deal with the simultaneity problem and market distortions. In (8),  $\omega_{ijt}$  is the observed part and  $u_{ijt}$  is the random disturbance term. The expectation of future realisation of productivity growth (i.e., observed term) increases in its contemporaneous values of stock (log-capital) and proxy variables (material costs and fuels in Levinshion-Petrin method and gross capital formation in Olley-Pakes method, denoted as  $m_{ijt}$ ). In other words, an unknown function for optimal decision of  $m_{ijt}$  can be written as  $m_{ijt} = m_t(w_{ijt}, k_{ijt})$ . Inverting this function, we write further as  $w_{ijt} = h_t(m_{ijt}, k_{ijt})$  and therefore,  $\phi_{ijt} = \lambda k_{ijt} + h_t(m_{ijt}, k_{ijt})$  where third order polynomials in  $m$  and  $k$  including constant term have been used to define this unknown function. Denoting the estimated variables as  $\tilde{\phi}_{ijt}$  and substituting this into (8), we find

$$SR_{ijt} = \beta LER_{ijt} + \eta BER_{ijt} + \tilde{\phi}_{ijt} + u_{ijt} \quad (9)$$

Note that this equation is slightly different from the original forms used in both approaches. At first stage, this equation will be estimated and in order to go to the second stage, we define another variable as  $V_{ijt} = SR_{ijt} - \hat{\beta} LER_{ijt} - \hat{\eta} BAR_{ijt}$ . Alternatively, this equation can be written as follows:

$$V_{ijt} = \gamma k_{ijt} + g(\tilde{\phi}_{ijt-1} - \gamma k_{ijt-1})_{ijt} + v_{ijt} + u_{ijt} \quad (10)$$

Again,  $g$  appears to be an unknown function and is approximated to third order polynomials for the estimation of this equation. This would be bit more cumbersome than the first-stage estimation and the estimated  $V_{ijt}$  provides our modified figures of TFP. We have bootstrapped the regressions by 250 times.



## Biography



Dibyendu Maiti is currently working as an Associate Professor in the School of Economics at The University of the South Pacific, Fiji. Previously, he has worked in several reputed international institutes like Centre for Studies in Social Sciences Calcutta, Centre for Development Studies, Trivandrum, University of Manchester, Institute of Economic Growth Delhi on various capacities. He also received Max Planck India Fellowship, IPPG (DFID-UK) Fellowship, Indo-China Exchange Fellowship, ESRC-ICSSR Fellowship for postdoctoral researches and has been visiting Max Planck Institute of Economic (Jena, Germany), University of Manchester (Manchester, UK), University of Nottingham (Nottingham, UK) for the same. His research includes industrial economics relating to trade, labour, subcontracting, innovation and informal sector. He has contributed to scholarship in the Cambridge Journal of Economics, Journal of International Trade and Economic Development, International Journal of South Asian Studies, Journal of Economic Development, Journal of Entrepreneurial Development, UNU-WIDER research paper series, India Macroeconomics Annual. He has served as a guest editor (jointly) of special volumes in the Journal of South Asian Development and Indian Journal of Labour Economics in 2010. He received IDRC Indian Social Science Award 2009 and Global Development Award 2009 for best research paper. He teaches International Economics and macroeconomic theory.

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