TRADE  DEFLECTION

JAPAN  US  E.U.

1. JAPAN FIRMS EXPORT TO BOTH US & EU
2. US IMPOSES AD DUTIES TO JAPANESE FIRMS
   ⇒ SALES IN US↓
3. ⇒ ↑ SALES TO EU
   ⇒ PEU↓
4. EU MAY IMPOSE AD DUTY.

DATA to show this

SALES (JAPAN FIRMS) vs. TIME
MODEL

1. \[ F \text{irm } 1 \]
\[ F \text{irm } 2 \]

2. \[ F \text{irm } 1 \]
\[ F \text{irm } 2 \]

\[ p_1 \]
\[ p_2 \]

\[ T > 0 \]

With symmetry:

\[ p_1 = p_2 \]

\[ \Rightarrow \] According to AD Legislation that both firms are "dumping" their product in the other country's market.

What is Fair Price in this case?

Example:
Firm 1 is "dumping" its product in country 2. Why?

Home Price for Firm 1: \( p_1 \)
Foreign Price: \( p_2 \)

\[ \Rightarrow \] Fair Price:
\[ p_1 + T \times \text{Trade Costs} \]

\[ = p_1 \]
\[ \text{Home Price} \]
\[ p_2 \]
\[ \text{Foreign Price} \]
Then
\[ p_F = p_2 < \frac{p_1 + p}{p_1 - p} \quad \text{Fair Price} \]

Since \( p_1 = p_2 \)

\[ \Rightarrow \text{DUMPING!} \]

Same thing is true for Firm 2

Since
\[ p_1 < p_2 + T \]

"Fair Price" for Firm 2

This is then the reciprocal "DUMPING MODEL"
is not necessarily harmful and, in fact, benefits consumers through lower prices in most cases, the WTO allows the use of antidumping duties to raise the price of dumped products. Under WTO rules, an importing country can impose an antidumping duty if there is proof that dumping is occurring and that it is causing injury to the domestic firm that competes with the dumped goods.

Figure 2 presents the total number of antidumping investigations by the U.S., EU, Canada, and Australia over the last 15 years. Among traditional users, the number of antidumping investigations fluctuates considerably from year to year with no clear trend over time. However, in figure 3, which plots the total number of antidumping investigations by all other GATT-WTO members, we see that there has been a steady increase in the number of antidumping investigations over this period.

There are many potential explanations for the rise in antidumping protection and I discuss only a few. Ultimately, the rise of antidumping protection can be traced back to changes in the rules-based trading regime of the WTO and its predecessor, the General Agreement on Tariffs and Trade (GATT). The first major increase in the use of antidumping duties began after rule changes introduced during the Tokyo Round of trade negotiations in 1979. The first surge in the use of antidumping duties was concentrated among the U.S., EU, Canada, and Australia, all GATT members. The second major increase began in the early 1990s as numerous developing countries joined the GATT and, later, the WTO. In signing on to the rules-based trading regime, countries agreed to restrict their use of import tariffs and other barriers to trade.

It appears that in some cases, facing competitive pressure from lower-priced imports, countries whose firms compete with imports turned to one of the few loopholes in the WTO rules, the use of antidumping duties.

In addition to this important explanation, linkages among countries may have affected the frequency of antidumping activity. As the use of antidumping duties has spread, researchers have begun to examine if the use of these policies in different countries is linked, either directly through the strategic behavior of governments or indirectly through the use of antidumping policies to control import surges caused by other countries' antidumping duties.

One factor behind the rise of antidumping protection could be that countries are engaging in retaliatory mini-trade wars. If one country imposes an antidumping duty against another, the second country will retaliate by imposing its own antidumping duty against the first. A 2002 paper by Tom Prusa and Susan Skeath examines whether the increasing use of antidumping duties is due to economic factors, like a rise in dumping or strategic factors, like retaliation. They study antidumping cases filed by GATT-WTO members between 1980 and 1988 and find evidence for a strategic motive in the initiation of antidumping cases. Specifically, they find that a country is more likely to begin an antidumping case against its trading partner if the trading partner used an antidumping duty against it in the past. Prusa and Skeath argue that their results "help to reject the notion that the rise in antidumping activity can be solely explained by an increase in unfair trade."

While Prusa and Skeath find a significant retaliatory motive behind the proliferation of antidumping duties, a study by Blonigen and Bown (2003) suggests that the threat of a retaliatory antidumping duty could eventually have a "cold war" effect that dampens antidumping activity if antidumping laws become more widespread. They argue that a country that is contemplating an antidumping duty against an important trading partner may actually refrain from imposing the measure if there is a threat of retaliation. In their examination of U.S. antidumping activity from 1980 to 1998, Blonigen and Bown find that if a country is a significant export market for U.S. producers, and thus has the ability to adversely affect U.S. exporters through its own retaliatory
antidumping duty, the U.S. is less likely to impose an antidumping duty in the first place. An interesting implication of this is that such a cold war effect may not materialize and instead the use of antidumping protection may be biased against small and developing countries if such countries continue to have little ability to retaliate effectively against an antidumping duty imposed by a major trading partner.

Taken together, what do these two papers tell us about the role of retaliation in the spread of antidumping protection? It may be that credible threats of retaliation can lead to a dampening of antidumping activity, but that non-economic, strategic motives are an important factor in the rise of antidumping protection.

A 2003 paper by Bown and Crowley postulates that some of the increase in the use of antidumping duties may be related to the problem of trade deflection. Bown and Crowley examine what happens to the exports of a country, specifically Japan, when it faces U.S. antidumping duties. Using highly detailed data on flows of Japanese exports to almost all the countries in the world, Bown and Crowley try to determine if the imposition of U.S. antidumping duties on Japanese products leads to an increase in Japanese exports to other countries, i.e., trade deflection. After controlling for a variety of other factors, like changes in gross domestic product growth, industry productivity, and movements in the exchange rate, Bown and Crowley find that Japanese export growth to countries other than the U.S. increases by roughly 10 to 20 percentage points when the U.S. imposes an antidumping duty on Japanese products.

Figure 4 illustrates Bown and Crowley’s main finding of trade deflection. This figure graphs the average growth rates of Japanese commodity exports by their destination—the U.S., the EU, and non-EU third countries—if the exports were subject to a new U.S. antidumping duty between 1992 and 2001. It plots the average growth rates of Japanese exports in the year in which the antidumping case was initiated (time t) and in the two years prior to the initiation of the antidumping investigation. The blue line designates exports to the U.S. that are subject to a new U.S. antidumping duty. As one might expect, in the year before a successful antidumping case is initiated, growth of the products that eventually face an antidumping duty is very high, slightly below 30%. In the year in which an antidumping case is initiated in the U.S., the growth of Japanese exports falls to −10%. By way of comparison, the average growth rate of all commodities exported from Japan to the U.S. between 1992 and 2001 was roughly 0%.

More interestingly, the black line plots the average growth of Japanese exports to the EU in the year in which a successful U.S. antidumping investigation begins and in the two years prior. Although there is little change in the growth of these Japanese commodity exports to the EU in the two years prior to the U.S. antidumping investigation, in the year in which a U.S. antidumping investigation is initiated, Japanese exports to the EU surge to over 25%. Bown and Crowley interpret this as “trade deflection.” They hypothesize that the commodities that the Japanese had planned to sell in the U.S. market are redirected to the EU in response to the adverse change in U.S. trade policy.

We see a similar pattern of trade deflection in Japanese exports to other, non-EU countries. While export growth of the specific commodities is close to zero in the periods before the initiation of a U.S. antidumping duty, it jumps up to about 3.5% when the U.S. initiates a successful antidumping investigation. The EU may be a preferred destination for deflected trade because it is a large market with demand for many of the same goods that Japanese firms sell in the U.S. and because many Japanese firms have a presence in the EU, making it relatively easy to shift sales there.

How does this finding of trade deflection relate back to the question of the explosion in the worldwide use of antidumping duties? Bown and Crowley speculate that trade deflection may be one of the pathways through which antidumping duties are multiplying. For example, if a U.S. antidumping duty against Japan leads to a surge of Japanese imports into the EU, the EU may then respond with its own antidumping duty against Japanese exports. The EU antidumping duty may then induce further...
• 1969 Birth
• 1994 Privatization
• 1999 French Consortium Buys 20% of Shares
• 1999-2000 WTO case ruling
• 2002 ARBIN (China) Alliance
KEY ISSUES

• R&D
• Gov. – Firm Interactions
• Education/Skill Labor Force
• Macro Instability
• Canada/Brazil comparisons
CONTEXT

• Cultural/demand Factors

• Administrative/Political Factors
  – Strategic Status: Military/National Pride
  – Government support: funding, procurement, tariff breaks (inputs), tax breaks, knowledge flows
• Government Support
  – R&D, Learning Institutions nearby
  – 1% tax obligations could be invested
  – Duty free imports of inputs
  – Export financing at rates below market
• Economic Factors
  – Low labor costs (specially skilled labor)
  – Economies of scale: high R&D/Design costs
  – Limited network of suppliers inside the country
STRATEGY

• Economic Factors
  – International network of suppliers (risk sharing)
  – Focus on design and assembly at home
• Government related issues

  – Partnerships /open markets (E.U and China)
    Sharing costs, financing
• Sales
  – Open US sales /representation in Florida
  – Links to partners
  – Advisory board
Embraer vs Bombardier

• Bombardier:
  – Vertical Integration
  – Cost disadvantage (skilled labor)

• Embraer:
  – International network of suppliers
  – Cost advantage: price of skilled labor lower
International Oligopoly Pricing Game

Firm 1: Choose Prices
Firm 2: Similarly
Firm 3: Choose Strategy

Firm 1: Differ Product Price Cost

3-10-16
$p_1 = \frac{1}{2} - q_1$ 

$\Rightarrow q_1 = \frac{1}{2} - p_1$

$p_2 = \frac{1}{2} - q_2$ 

$\Rightarrow q_2 = \frac{1}{2} - p_2$

$p_{13} \Rightarrow \text{Demand} \quad q_{13} = \frac{2}{3} [1 - 2k_{13} + k_{23}]$

$p_{23} \Rightarrow \text{Demand} \quad q_{23} = \frac{2}{3} [1 - 2k_{23} + k_{13}]$

$p_1 = \text{Firm 1 Price in Country 1}$

$p_2 = \text{Firm 2 Price in Country 2}$

$p_{13} = \text{Firm 1 Price in Country 3}$

$p_{23} = \text{Firm 2 Price in Country 3}$

$\bar{p}_1 = \text{Uniform Price of Firm 1}$

(i.e. $\bar{p}_1 = p_1 = p_{13}$)

$\bar{p}_2 = \text{Uniform Price of Firm 2}$

(i.e. $\bar{p}_2 = p_2 = p_{23}$)

Strategy/action sets for both firms in stage 1: $\{U, L\}$ uniform
REMARK:

IF FIRM 1 USES U (UNIFORM) ⇒
\[ p_1 = p_{13} = \bar{p} \]

IF FIRM 1 USES L (LOCAL) ⇒
\[ p_L \neq p_{13} \]

GAME TREE

FIRMS 1, 2
CHOOSE U OR L
SIMULTANEOUSLY

\[(U,U) \quad (U,L) \quad (L,U) \quad (L,L)\]

I
II
III
IV

FIRMS CHOOSE
\[ p_1, p_2 \]
SIM

SNEE: WORK BACKWARDS
⇒ FIND NE PRICES FOR THE 4 SUBGAMES (NODES \( I \) - \( IV \)) TO "GO UP"

ADDITIONAL ASSUMPTIONS:
- INDEPENDENT MARKETS (NO ARBITRAGE)
- NO TRADE COSTS
- COSTS: ZERO M.C.'S & FIXED COSTS

NOTATION:
\[(U,L)\] ACTION/STRATEGY FOR FIRM 1
ACTION/STRATEGY FOR FIRM 2
**Steps Some**

**Step 1:** Find NE Prices for Every Proper Subgame.

"Go up" =

**Step 2:** Calculate NE Profits for Every Proper Subgame and Construct a Matrix.

**Step 3:** Find NE in Pricing Strategy Assuming Firms Move Simultaneously and They Use Their NE Strategies in Every Subgame.
STEP 1:

(a) SUBGAME \((u,u)\) (AT NODE 1)
(b) GET BEST RESPONSES
(c) FIND NE

d) FIRM 1:

\[
\max \pi_1 + \pi_{13} = \bar{\pi}_1 \cdot q_1 + \bar{\pi}_3 \cdot q_{13}
\]
\[
\bar{\pi}_1 = \frac{\bar{\pi}_1 \cdot (\frac{1}{2} - \bar{\pi}_1) + \bar{\pi}_3 \cdot \frac{3}{5} [-2 \bar{\pi}_1 + b_{23}]}{b_{13}}
\]
\[
\frac{\partial \bar{\pi}_1}{\partial \bar{\pi}_1} = 0 \Rightarrow \bar{\pi}_1 = \frac{1}{4} + \frac{1}{7} b_{23} = \bar{p}_1 (b_{23})
\]

e) FIRM 2:

\[
\max \pi_2 + \pi_{23} = \bar{\pi}_2 \cdot q_2 + \bar{\pi}_3 \cdot q_{23}
\]
\[
\frac{\partial \bar{\pi}_2}{\partial \bar{\pi}_2} = 0 \Rightarrow \bar{\pi}_2 = \frac{1}{4} + \frac{1}{7} \bar{p}_{13} = \bar{p}_2 (b_{13})
\]

(6) SOLVING \(\triangle 10\) & \(\triangle 22\)

SETTING \(\bar{p}_{13} = \bar{\pi}_1\), \(\bar{p}_{23} = \bar{\pi}_2\)

\[
\Rightarrow \bar{\pi}_1 = \bar{p}_1 (\bar{\pi}_2) = \frac{1}{4} + \frac{1}{7} \bar{\pi}_2
\]
\[
\bar{\pi}_2 = \bar{p}_2 (\bar{\pi}_1) = \frac{1}{4} + \frac{1}{7} \bar{\pi}_1
\]

\[
\Rightarrow \bar{\pi}_1 = \bar{\pi}_2 = 0.29
\]
NE outcome (working towards step 2):

\[ \phi_1, \phi_1, \phi_1, \phi_1, \phi_1 \]

with \((u, v)\)

\[ \text{NE: } \pi_{1u} = 0.198 \]
\[ \pi_{2u} = 0.198 \]