The Effectiveness of Antidumping Measures under the Byrd Amendment

Some Empirical Evidence for Catfish

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INTRODUCTION

- Tariff barriers have decreased worldwide, but antidumping measurement has surged to play a crucial role as the most important non-tariff barrier (*Zanardi, 2004*).
- Antidumping duty (AD) is recently used more frequently, by more countries, and against more products (*Prusa, 2005*)
- As processed and differentiated agricultural products are increasingly traded cross national borders (*Reimer and Stiegert, 2006*) more of them are facing antidumping measurements conducted by importing countries
- Aquatic products trade has the same problem

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Global AD activity for agricultural and fisheries products

Product	Year	Filing country	Target countries
Apples	1994	Canada	US
	1998	Canada	US
	1997	Mexico	US
Beef	1991	Poland	EU
Bovine meat	1993	Mexico	EU
	1994	Mexico	US
	1998	Mexico	US
Canned ham	1990	Australia	Denmark, Ireland and the Neitherlands
Canned Mushrooms	1982	US	China
Chicken	1999	Argentina	Brazil
Crawfish tail meat	1996	US	China
Dried Salted Codfish	1984	US	Canada
Fishmeal	1994	Mexico	Chile

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Source: modifies from *Kinnucan and Myrland (2006)* with data searched from *Bown (2006)*

Global AD activity for agricultural and fisheries products

Product	Year	Filing country	Target countries
Fresh Atlantic Salmon	1990	US	Norway
	1997	US	Chile
	1996	EU	Norway
	1998	Mexico	US
	2002	Canada	Chile
	2004	EU	Chile, Faroe Islands and Norway
Fresh Round White Potatoes	1983	US	Canada
Fresh-Cut Roses	1983	US	Columbia
	1986	US	Canada, Columbia, Costa Rica, Ecuador, Mexico and Peru
	1994	US	Columbia and Ecuador

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Source: modifies from *Kinnucan and Myrland (2006)* with data searched from *Bown (2006)*

Global AD activity for agricultural and fisheries products

Product	Year	Filing country	Target countries
Frozen Beef	1993	Mexico	EU
Frozen catfish fillets	2002	US	Vietnam
Frozen Orange Juice	1986	US	Brazil
	1991	Australia	Brazil
Garlic	1994	US	China
	1996	Canada	China
	2000	South Africa	China
	2001	Canada	China and Vietnam
Honey	1994	US	China
Kiwi fruit	1991	US	New Zealand
Large Rainbow Trout	2003	EU	Norway, Faeroe Islands
Lettuce	1992	Canada	US
Live catle	1998	US	Canada and Mexico
Live Swine	2004	US	Canada
Non-Frozen Apple Juice Concentrate	1999	US	China
Peaches	1997	Mexico	Greece

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Source: modifies from *Kinnucan and Myrland (2006)* with data searched from *Bown (2006)*

Global AD activity for agricultural and fisheries products

Product	Year	Filing country	Target countries
Pineapple	1994	US	Thailand
Pork	1993	Australia	Canada
Poultry meat	1999	South Africa	US
Shrimp	2003	US	Brazil, China, Ecuador, India, Thailand and Vietnam
Slaughter hogs	1998	Mexico	US
Sour cherries	1991	Australia	France and Italy
Sour cherries	1998	Canada	US
	1995	Canada	US, Denmark, Germany, Neitherlands and UK
Sugar	1998	Panama	Columbia and Mexico
Tart cherry juice	1991	US	Germany and Yugoslavia
Turkey	1999	Yugoslavia/Slovenia	Hungary
Vegetable Oil	2001	Peru	Argentina
Whole potato	1985	Canada	US
Yellow Onion	1986	Canada	US

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Source: modifies from *Kinnucan and Myrland (2006)* with data searched from *Bown (2006)*

LITERATURE REVIEW
Imperfect Competition in Agricultural International Trade

- *Reimer and Stiegert, 2006*: a large number of the competitive behaviors in specific agricultural products have been documented.
- Rice export markets:
  - *Karp and Perloff (1989):* Thailand, Pakistan and China are oligopolists and all other countries as a competitive fringe
  - *Yumkella, Unnevehr and Garcia, (1994)*: US and Thailand competitive behaviors are also imperfect.
- Food and beverage export market
  - *Glauben and Loy (2003):* there are exercises of market power by German export of beer to North America, in exports of sugar confectionery to the UK and in exports of cocoa powder to Italy.
  - *Wilhelmsson (2006):* Swedish food and beverage industry do enjoy some varied degrees of market power which is decreased with foreign competition

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LITERATURE REVIEW
Imperfect Competition in Agricultural International Trade

- International markets of some other commodities:
  - *Buschena and Perloff (1991):* Philippines takes substantial market power in the coconut oil exports market
  - *Pick and Park (1991)*, *Patterson and Abbott (1994)*: evidence for price discrimination and market power by US wheat exporters.
  - *Karp and Perloff (1993):* Brazil and Columbia are oligopolistics in coffee export market
  - *Deodhar and Sheldon (1996):* German banana import market follows Cournot-Nash equilibrium
  - *Dong, Marsh and Stiegert (1996):* the global malting barley market operates as a Cournot quantity setting oligopoly.
  - *Carter and MacLaren (1997)* US and Australian beef exporters follows the Stackerberg model with price leadership by Australians.

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LITERATURE REVIEW
Antidumping measurement – definition and investigation process

What does "dumping" mean?

There are two criteria in WTO regulations (*Knetter and Prusa, 2000*):
- First, there must be evidence that the domestic industry has materially injured (e.g., a loss or decline in profitability) by foreign imports
- Second, the foreign suppliers must be found to be selling their products at dumping prices

A dumping price is a price "less than fair value" (LTFV).

LTFV criterion can be determined in either of two ways:
(1) by showing that the price charged in the domestic market by the foreign suppliers is below the price charged for the same product in other markets (i.e., the "price-based" method)
(2) by showing that the price charged in the domestic market is below an estimate of cost plus a normal return (i.e., the "constructed-value" method).

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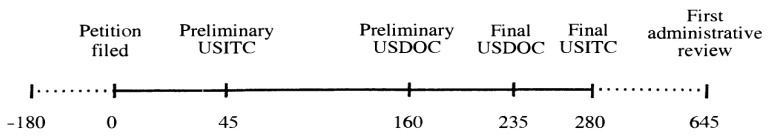
LITERATURE REVIEW
Antidumping measurement – definition and investigation process

In US, the Department of Commerce (DOC) and the International Trade Commission (ITC) administrate the antidumping laws. Each has distinct roles in the antidumping investigation process.

Blonigen and Haynes (2002): Exporters react to avoid or reduce the duty by raising their price prior to and during the long process of investigation



Time line of standard US Antidumping Investigation (Source: *Blonigen and Heynes, 2002)*

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LITERATURE REVIEW

The Byrd Amendment

- The Continued Dumping and Subsidy Offset Act of 2000, commonly the "Byrd Amendment", permits plaintiffs to be disbursed from collected antidumping and/or countervailing duty revenues.
- The disbursement is only available to "affected domestic producers" who
  - was a petitioner or interested party in support of a petition
  - remains in operation.

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LITERATURE REVIEW

The Byrd Amendment

The Byrd disbursement is a subsidy for domestic industries

- Between 2001 and 2004, $1 billion was paid to 770 firms that were allegedly harmed by unfair trade practices
- More than half of the $226 million of Byrd Amendment payouts in 2005 went to five companies, and 80% percent of the payouts went to only 34 companies and two thirds of the disbursement flow to only 3 of the 77 eligible industries

The Byrd Amendment not only harms the U.S. economy but also hurts US exporters.

11 trading partners, including European, Canada and Mexico, have been awarded the right to impose retaliatory duties on U.S. exports, up to $134 million in 2005 (Odessey 2006).

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LITERATURE REVIEW

The Byrd Amendment

Olson, 2005: more US domestic industries have lobbied for more tariff protection since the passage of the Byrd Amendment.

Markheim, 2005: the Byrd Amendment

- reduces U.S. competitiveness,
- imposes unnecessary costs on households and import-consuming businesses,
- Domestic firms eligible for payouts are subsidized against both foreign competitors and unlucky U.S. firms (which are able to effectively compete against foreign producers or are unable to meet eligibility requirements for Byrd disbursement)

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LITERATURE REVIEW

The Byrd Amendment

- *Jung and Lee, 2003:* the Byrd Amendment
  - provides an incentive for domestic industries to file antidumping legislations,
  - distorted competition between the firms who are beneficiaries and those who did not have enough resource or information to support the petitions.
  - The amendment disappoints the legitimate expectation from exporting countries
  - violate WTO trade remedy rules and imposes costly distortions on the U.S. economy

- Thus, the longer Byrd payments still offered to US domestic industries, the more US's trade partners can retaliate against U.S. goods and the more U.S. consumers suffer.
- The Byrd Amendment had been at last repealed by the US Congress in January 2006 but the repeal was only go in action since October 2007.

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HYPOTHESES

- Anti-dumping duties tend to be ineffective (*Kinnucan, 2003*).
- The Byrd Amendment has the paradoxical effect of increasing the value and total volume of imports (*Evenett, 2006*) and undermines the original intent of the duty because it gives an incentive for the domestic firm to increase its price for an increase in the sales of the foreign firm, which increases the domestic firm's revenue from the tariff.

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THIS STUDY

- Assumes Bertrand competition and differentiated goods.
- price-reaction functions are derived and estimated jointly with a demand equation using monthly data for the period January 1999-August 2006
- test whether US price and quantity increased during the tariff period, as predicted by theory.

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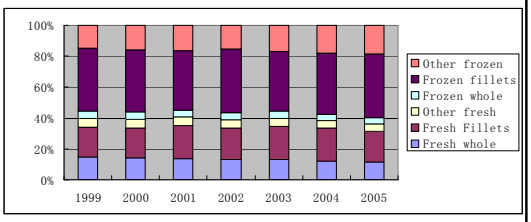
CASE STUDY – CATFISH WAR

- Catfish production is one of the biggest aquaculture industries in the US and frozen catfish fillets is the most important product of the US catfish processing industry (*Harvey, 2005*).



The anti-dumping duties are large (ranging from 45% to 64%) affected all of the fisheries processing companies in Vietnam that export to the US and were implemented in 2003, two years after the Byrd Amendment went into force.

Disbursement paid to processors of $9.2 million in two fiscal years of 2005-2006, or 3% of their 2005 sales revenue of frozen catfish fillet.

The case attracted substantial media attention with articles in the *New York Times* and *Wall Street Journal* focusing the ethical and policy dilemmas raised by the action

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Table 3. Imports, Production and Prices of US Catfish Industry 1999-2005

	1999	2000	2001	2002	2003	2004	2005
Frozen fillets imports from VN (mil. lb.)	1.99	7.04	17.12	9.62	4.25	6.57	17.42
US frozen fillets production (mil.lb.)	119.92	119.65	115.16	131.27	124.70	121.80	123.68
US farm production (mil. lb.)	596.63	593.60	597.11	630.60	661.47	630.45	600.67
f.o.b Vietnam price ($/lb)	2.04	1.52	1.26	1.29	1.21	1.15	0.93
US frozen fillets price ($/lb)	2.76	2.83	2.61	2.39	2.41	2.62	2.67
Farm price (cent/lb.)	73.75	75.22	64.81	56.86	58.17	69.75	72.36
Tariff rate (cent/lb.)	-	-	-	-	64	61	49

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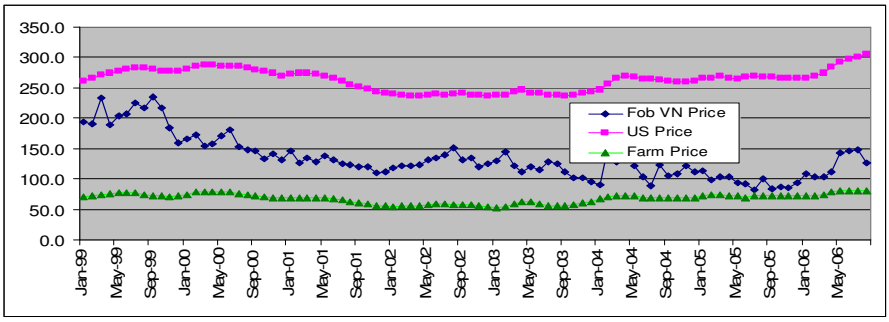
Prices of frozen catfish fillets



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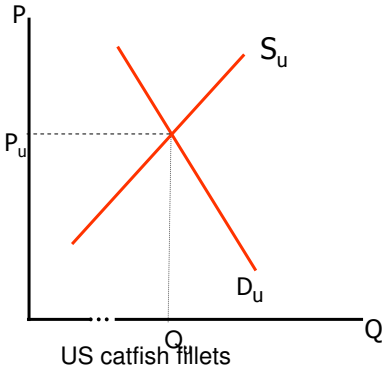
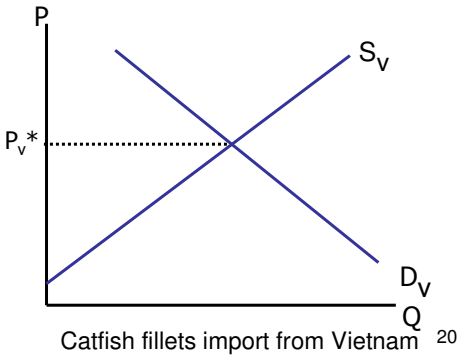
THEORETICAL FRAMEWORK

Incidence of a tariff in a perfect competition

Assume: US and VN catfish fillets are substitute goods in US market



US catfish fillets



Catfish fillets import from Vietnam

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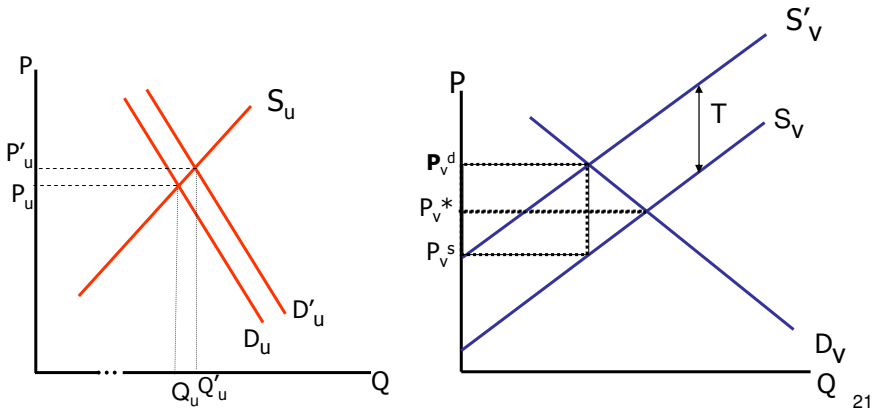
THEORETICAL FRAMEWORK

Incidence of a tariff in a perfect competition

An antidumping tariff T imposed on VN catfish fillets raises home price and output



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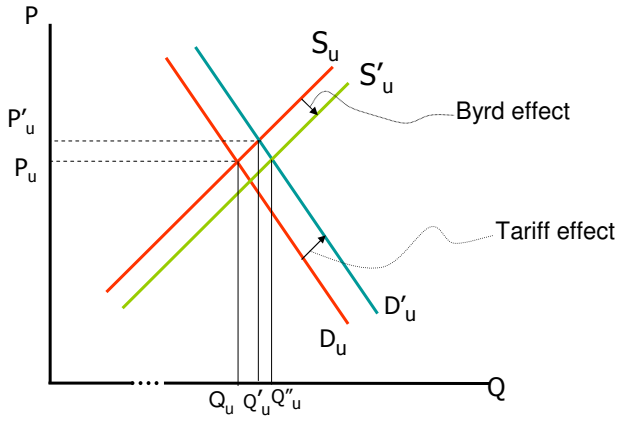
THEORETICAL FRAMEWORK

Incidence of a tariff in a perfect competition

Incidence of an antidumping tariff with Byrd Amendment

Byrd effect can offset the tariff effect on home price in perfect competition



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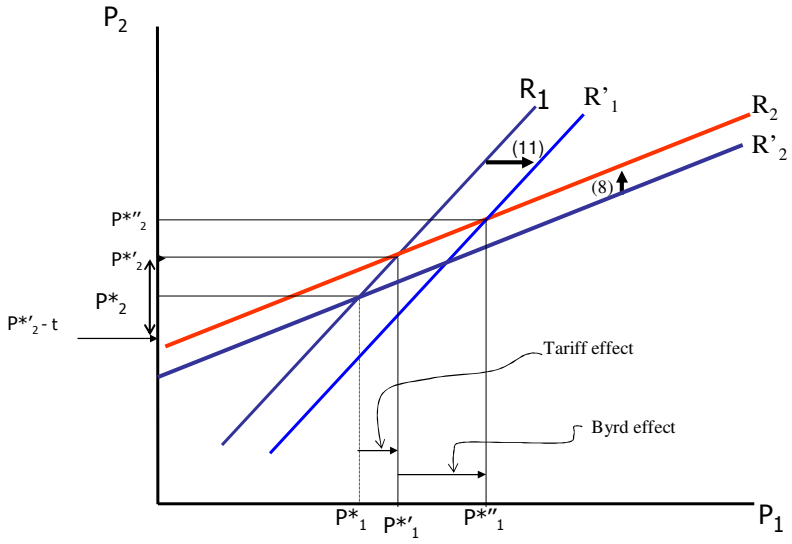
THEORETICAL FRAMEWORK

Incidence of a tariff in a Bertrand competition

Best reaction functions of domestic and import catfish from Vietnam



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THEORETICAL FRAMEWORK

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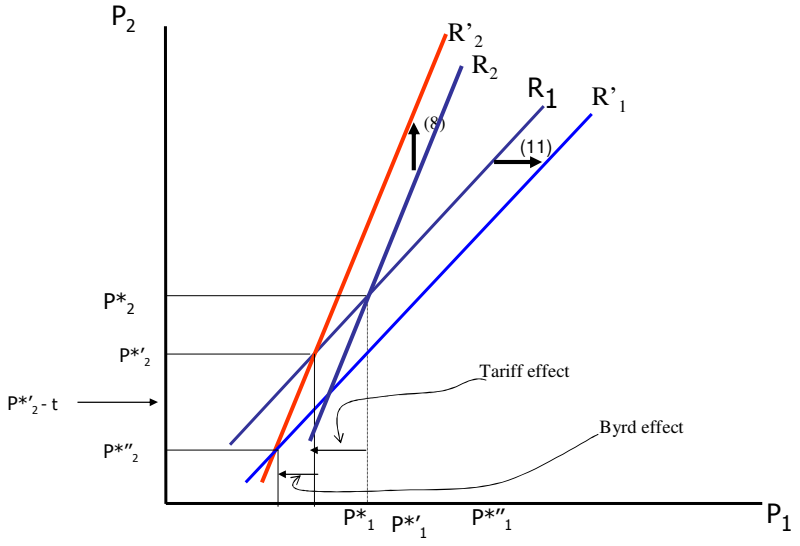

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THEORETICAL FRAMEWORK
Bertrand Competition

Q_1 is the quantity sold in the home market by the home firm at price P_1

Q_2 is the quantity sold in the home market by the foreign firm at price P_2

$$Q_1 = \alpha_1 - \beta_1 P_1 + \gamma_1 P_2$$

$$Q_2 = \alpha_2 - \beta_2 P_2 + \gamma_2 P_1$$

$$\beta_i > 0 \quad \gamma_i \geq 0$$

The degree of substitutability between Q_1 and Q_2 is given by $0 < \frac{\gamma_1 \gamma_2}{\beta_1 \beta_2} < 1$

To protect the home firm, a tariff equal to *t* is imposed on each unit of sales by the foreign firm.

$P_2 = P_2^- + t$ P_2^- is the f.o.b price received by the foreign seller
t is the per-unit dumping duty.

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THEORETICAL FRAMEWORK
Bertrand Competition

$Q_{21} = \alpha_2 - \beta_2 P_2 + \gamma_2 P_1$ quantity sold by the foreign firm in the home market

$Q_{22} = \alpha_3 - \beta_3 P_3$ quantity sold in alternative export markets

$Q_2 = Q_{21} + Q_{22}$ is the foreign firm's total exports

With the Byrd subsidy for the US firm, profit functions for the home and foreign firms

$$\pi_1 = (P_1 - C_1)Q_1 + \varphi t Q_{21}$$
$$\pi_2 = (P_2 - C_2 - t)Q_{21} + (P_3 - C_3)Q_{22}$$

C_1 is the home firm's constant marginal cost
ϕ <1 is a parameter indicating the firm's share of the total duties collected
C_2 and C_3 are the foreign firm's per-unit marginal cost of supplying the two markets

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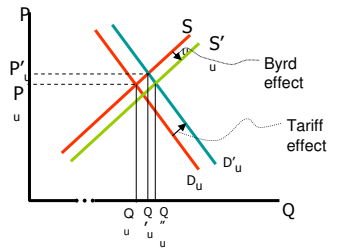
THEORETICAL FRAMEWORK



Perfect competition

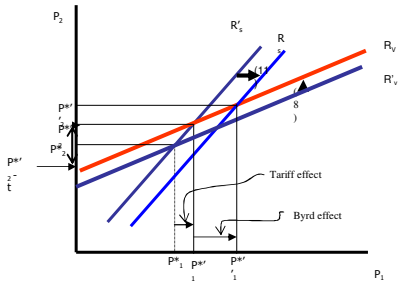
$$P_1 = \frac{\alpha_1 + \phi_1}{\varepsilon_1 + \beta_1} + \frac{\gamma_1}{\varepsilon_1 + \beta_1} P_2^- + \frac{\theta_1}{\varepsilon_1 + \beta_1} C_1 + \frac{\gamma_1 - \psi\varepsilon_1}{\varepsilon_1 + \beta_1} t$$

$$P_2^- = \frac{\alpha_2 + \phi_2}{\varepsilon_2 + \beta_2} + \frac{\gamma_2}{\varepsilon_2 + \beta_2} P_1 + \frac{\theta_2}{\varepsilon_2 + \beta_2} C_2 - \frac{\beta_2}{\varepsilon_2 + \beta_2} t$$

Comparison to the Bertrand competition

$$P_1 = \frac{\alpha_1}{2\beta_1} + \frac{\gamma_1}{2\beta_1} P_2^- + \frac{1}{2} C_1 + \frac{\gamma_1 + \varphi\gamma_2}{2\beta_1} t$$

$$P_2^- = \frac{\alpha_2 - \alpha_3}{2\beta_2} + \frac{\gamma_2}{2\beta_2} P_1 + \frac{\beta_3}{\beta_2} P_3 + \frac{1}{2} C_2 - \frac{\beta_3}{2\beta_2} C_3 - \frac{1}{2} t$$



While the Byrd Amendment *enhances* duty efficacy under Bertrand competition, it *undermines* efficacy under perfect competition

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EMPIRICAL FRAMEWORK

Assumption

There are two firms, domestic catfish process industry and Vietnamese catfish exporters competing to supply frozen catfish fillets to US market

US catfish fillets does not compete with the Vietnamese catfish in other market because US catfish fillets exports is so tiny

Catfish fillets produced by US and Vietnamese processors are differentiated (under "labeling" law and biological species differences)

Both firms use price-setting duopoly in US market

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EMPIRICAL FRAMEWORK

$$P_1 = \delta_0 + \delta_1 P_{sal} + \delta_2 P_p + \delta_3 I + b_1 P_2^- + d_1 f + w_1 W + w_3 G + \varepsilon_1$$

$$P_2^- = \delta_0' + \delta_1' P_{sal} + \delta_2' P_p + \delta_3' I + b_2 P_1 + d_2 f + eX + \varepsilon_2$$

$$Q_1 = \xi_0 - \xi_1 P_1 + \xi_2 P_2^- + \xi_3 P_{sal} + \xi_4 P_p + \xi_5 I + \varepsilon_D$$

Variable	Description	Unit	Source of data
Q_1	Production of US frozen catfish fillets	$/lb	USDA
P_1	Price of US frozen catfish fillets	$/lb	USDA
P_2^-	F.o.b price of Vietnamese frozen catfish fillets	$/lb	NMFS
P_{sal}	Price of salmon import	$/lb	NMFS
P_p	US poultry price	$/lb	IMF
I	US personal income per capita	$/year	US BEA
f	Freight index from Pacific		US BLS
W	US wage of manufacture sector	$/hr	US BLS
G	Energy index in US market		US BLS
X	Real exchange rate of VND against US$	VDN/$	oanda.com

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SUR regression for	US price		Demand for the US fillets	
Variable	Coef.	t-value	Coef.	t-value
PRELIM	0.000	0.068	0.001	0.054
FINAL	0.005**	2.126	0.019	1.207
US domestic price			**-2.359****	-3.268
Vietnamese f.o.b price	**0.019****	2.613	0.131**	2.407
Poultry price	0.019	0.253	-0.593	-1.068
Salmon price	0.016	1.208	-0.122	-1.211
US per capita income	0.128	1.228	**1.421***	1.821
Manufacture wage	0.207	1.329		
Energy index	0.004	0.151		
Freight index from Pacific	**0.114****	2.106		
Lag of dependent variable	**0.345*****	3.879	**-0.533*****	-6.246
Constant	-0.003	-1.213	-0.095***	-4.980
Q1	0.008**	2.374	0.202***	8.392
Q2	-0.003	-0.914	0.039*	1.694
Q3	-0.005*	-1.748	0.090***	4.034
R^2	0.48		0.54	

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** significant at 0.1 level ; ** significant at 0.05 level; *** significant at 0.01 level*

Table 4. SUR regression for reaction price equations and demand of US catfish fillets

	US home price		VN price		Demand for US products	
Variable	Coef.	t-value	Coef.	t-value	Coef.	t-value
PRELIM	0.000	0.068	0.015	0.426	0.001	0.054
FINAL	0.005**	2.126	-0.022	-0.783	0.019	1.207
US domestic price			4.972***	3.801	-2.359***	-3.268
Vietnamese f.o.b price to US	0.019***	2.613			0.131**	2.407
Non-US market price			0.022	0.395		
Salmon price	0.016	1.208	-0.026	-0.146	-0.122	-1.211
Poultry price	0.019	0.253	-0.289	-0.293	-0.593	-1.068
US per capita income	0.128	1.228	-0.215	-0.149	1.421*	1.821
Manufacture wage	0.207	1.329				
Energy index	0.004	0.151				
Freight index from Pacific	0.114**	2.106	-1.233*	-1.658		
Real exchange rate VND-USD			0.192	0.705		
Lag of dependent variable	0.345***	3.879	-0.464***	-4.657	-0.533***	-6.246
First quarter	0.008**	2.374	0.014	0.341	0.202***	8.392
Second quarter	-0.003	-0.914	0.049	1.085	0.039*	1.694
Third quarter	-0.005*	-1.748	0.050	1.242	0.090***	4.034
Constant	-0.003	-1.213	-0.025	-0.741	-0.095***	-4.980
R^2	0.48		0.26		0.54	
D.W-h	1.31		0.00		1.10	

	US home price		VN price		Demand for US products		US farm price	
Variable	Coef.	t-value	Coef.	t-value	Coef.	t-value	Coef.	t-value
PRELIM	0.002	0.657	-0.004	-0.106	0.012	0.582	0.004	0.643
FINAL	0.006***	2.531	-0.029	-0.963	0.031*	1.824	0.006	1.167
US domestic price			5.087***	3.656	-2.958***	-3.830	1.148***	4.640
Vietnamese f.o.b price to US	0.017**	2.318			0.126**	2.244		
Non-US market price			0.050	0.919				
Salmon price	0.016	1.172	-0.024	-0.127	-0.169	-1.614	-0.070**	-2.161
Poultry price	0.004	0.049	-0.441	-0.382	-0.451	-0.704	-0.113	-0.568
US per capita income	0.135	1.291	-0.935	-0.660	1.454*	1.865		
Manufacture wage	0.232	1.472						
Energy index	0.003	0.133						
Freight index from Pacific	0.073	1.263	-0.952	-1.207				
Real exchange rate VND-USD			-0.531	-1.055				
US demand (lag 5)							-0.084***	-3.139
Lag of dependent variable	0.320***	3.444	-0.460***	-4.463	-0.547***	-6.321	0.208**	2.248
First quarter	0.009**	2.471	0.009	0.223	0.205***	8.350	0.011	1.596
Second quarter	-0.003	-0.831	0.056	1.205	0.029	1.201	-0.003	-0.467
Third quarter	-0.005	-1.562	0.055	1.362	0.088	3.888	0.001	0.189
Constant	-0.005	-1.629	-0.018	-0.504	-0.103***	-5.279	-0.004	-0.748
R2	0.46		0.23		0.54		0.55	
DW-h	-1.53		-0.11		-1.65		0.90	

CONCLUSION

- The US domestic price of frozen catfish fillets increased after the ITC imposed an antidumping tariff on Vietnamese frozen catfish fillets import.
- The tariff incidence on US catfish price is very small (0.5 – 0.6%)
- Antidumping duty is a weak tool to protect domestic catfish industry.
- Other measurements rather than tariff should be implemented to support domestic catfish industry to raise it competition capacity to import catfish.
- With the Byrd Amendment and Bertrand imperfect competition, the US domestic firms have ability to raise their price for a respective rise in targeted import price and get more disbursement from larger tariff revenues.

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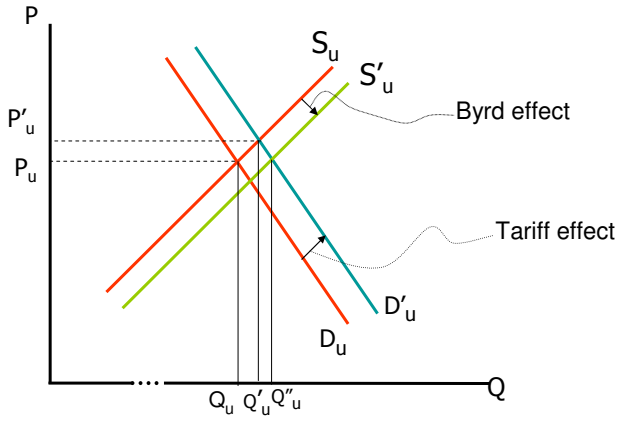
Incidence of an antidumping tariff with Byrd Amendment in a perfect competition

Byrd effect can offset the tariff effect on home price in perfect competition



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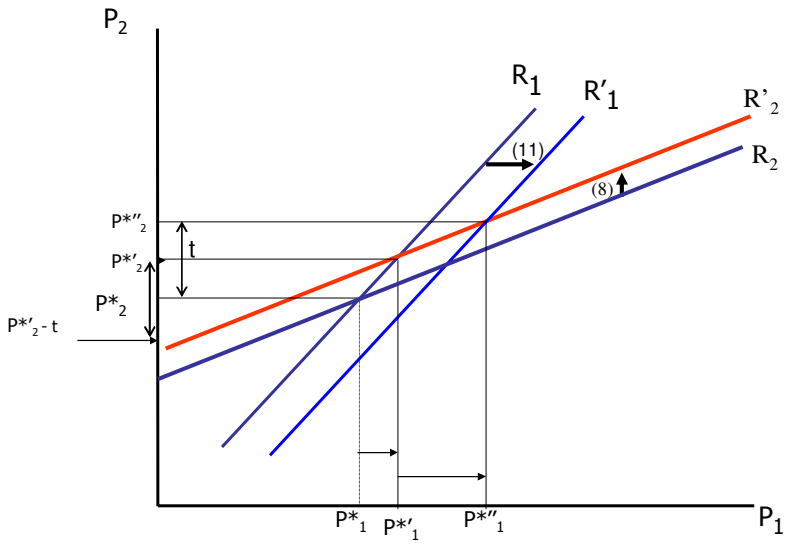
Incidence of an antidumping tariff with Byrd Amendment in a Bertrand competition



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THANK YOU!

Comments and questions?

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