



รายงานวิจัยฉบับสมบูรณ์

โครงการ นโยบายการเปิดเสรีทางการค้าที่เป็นภาษี และการใช้มาตรการตอบโต้การทุ่มตลาด
Tariff Liberalization Policies and Anti-dumping Filings

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The relationship between tariff policy and anti-dumping use is examined in the current paper. Using a panel dataset of 96 countries over the period of 1995-2005, the effects of tariff liberalization on anti-dumping use are found to vary across world regions. For the OECD and the European and Central Asian regions, a lower tariff rate is associated with more anti-dumping, which appears to emerge as a protection tool among trade liberalization regimes. In contrast, a reduction in the tariff rate leads to lower anti-dumping use in the Latin American and Caribbean regions. In addition, there appears to be higher motivation to use anti-dumping in developed countries, especially in the European and Central Asian regions.

งานวิจัยนี้ศึกษาถึงความสัมพันธ์ระหว่างนโยบายการเปิดเสรีทางการค้าที่เป็นภาษี และการใช้มาตรการการตอบโต้การทุ่มตลาด โดยใช้ข้อมูล Panel data ของ 96 ประเทศ ในช่วงระหว่างปี ค.ศ. 1995 ถึง 2005 ผลที่ได้พบว่าผลกระทบจากการใช้นโยบายการเปิดเสรีทางการค้าที่เป็นภาษีและ การใช้มาตรการตอบโต้การทุ่มตลาดมีลักษณะที่แตกต่างกันตามภูมิภาคต่างๆ ในโลก สำหรับกลุ่มประเทศ OECD และกลุ่มประเทศในยุโรปและเอเชียกลาง การลดอัตราภาษีอากรนำเข้าสินค้าพบว่าติดตามด้วยการใช้มาตรการการตอบโต้การทุ่มตลาดที่เพิ่มขึ้น ผลที่ได้ชี้ว่า มาตรการการตอบโต้การทุ่มตลาดถูกนำมาใช้เพื่อป้องกันการเปิดเสรีทางการค้าที่เกิดขึ้น ในทางกลับกัน สำหรับกลุ่มประเทศในภูมิภาคลาตินอเมริกาและแคริบเบียน การลดอัตราภาษีอากรนำเข้าพบว่าติดตามด้วยการใช้มาตรการการตอบโต้การทุ่มตลาดที่ลดลง นอกจากนี้ยังพบว่า กลุ่มประเทศที่พัฒนาแล้วโดยเฉพาะอย่างยิ่งในกลุ่มประเทศในยุโรปและเอเชียกลาง มีแรงจูงใจที่จะใช้มาตรการการตอบโต้การทุ่มตลาดมากกว่ากลุ่มประเทศอื่นๆ

Keywords: antidumping; trade policy; tariff liberalization

(คำหลัก) มาตรการตอบโต้การทุ่มตลาด นโยบายการค้า การเปิดเสรีทางการค้าที่เป็นภาษี

Executive Summary (บทสรุปผู้บริหาร)

งานวิจัยชิ้นนี้ทำการศึกษาถึงความสัมพันธ์ระหว่างนโยบายการเปิดเสรีทางการค้าที่เป็นภาษีกับการใช้มาตรการการตอบโต้การทุ่มตลาดทั้งในเชิงทฤษฎีและในเชิงประจักษ์ สำหรับการศึกษาในเชิงทฤษฎี แม้ว่านโยบายการเปิดเสรีทางการค้าจะเพิ่มโอกาสในการใช้มาตรการการตอบโต้การทุ่มตลาดโดยการฟ้องร้องจากความเสียหายอย่างสำคัญ (Material injury) แต่สำหรับความสัมพันธ์กับการฟ้องร้องจากการขายด้วยราคาที่ต่ำกว่าราคาที่เป็นธรรม (Less than fair value: LTFV) กลับไม่ชัดเจนนักในทางทฤษฎี ดังนั้นการใช้นโยบายการเปิดเสรีทางการค้าที่เป็นภาษียังมีผลกระทบที่ไม่ชัดเจนนักต่อการใช้มาตรการการตอบโต้การทุ่มตลาด ด้วยความสัมพันธ์ที่ยังคลุมเครือในเชิงทฤษฎีจึงทำให้การศึกษาในเชิงประจักษ์มีความสำคัญเป็นอย่างมาก

ผลกระทบจากการเปิดเสรีทางการค้าที่เป็นภาษีก่อให้เกิดการใช้มาตรการการตอบโต้การทุ่มตลาดมีลักษณะที่แตกต่างกันตามภูมิภาคต่างๆ ในโลก สำหรับกลุ่มประเทศ OECD และกลุ่มประเทศยุโรปและเอเชียกลาง การลดอัตราภาษีอากรนำเข้าสินค้าพบว่าคิดตามด้วยการใช้มาตรการการตอบโต้การทุ่มตลาดที่เพิ่มขึ้น โดยมาตรการการตอบโต้การทุ่มตลาดถูกนำมาใช้เพื่อป้องกันการเปิดเสรีทางการค้าที่มีขึ้น และกลุ่มประเทศที่กำลังพัฒนามีแรงจูงใจที่น้อยกว่ากลุ่มประเทศที่พัฒนาแล้วที่จะนำมาตราการการตอบโต้การทุ่มตลาดมาใช้ นอกจากนี้ยังพบว่า กลุ่มประเทศกำลังพัฒนาที่มีความอ่อนไหวที่น้อยกว่าต่อการเปลี่ยนแปลงนโยบายการกีดกันทางการค้าที่เป็นภาษีที่เกิดขึ้น ในทางกลับกัน สำหรับกลุ่มภูมิภาคลาตินอเมริกาและแคริบเบียน การลดอัตราภาษีอากรนำเข้าสินค้าตามด้วยการใช้มาตรการการตอบโต้การทุ่มตลาดที่ลดลงอย่างมีนัยสำคัญ ดังนั้นผลที่พบในส่วนนี้แสดงให้เห็นว่า กลุ่มประเทศในภูมิภาคลาตินอเมริกาและแคริบเบียนมีความมุ่งมั่นอย่างแท้จริงต่อการเปิดเสรีทางการค้าเป็นอย่างมาก

ผลจากการศึกษาเชิงประจักษ์ที่ได้ไม่สนับสนุนความเชื่อที่ว่า ประเทศที่พัฒนาแล้วเป็นผู้สนับสนุนอย่างแท้จริงต่อการเปิดเสรีทางการค้า ทั้งนี้ประเทศที่พัฒนาแล้วมีโอกาสสูงที่จะอยู่ภายใต้แรงกดดันทางการเมืองที่มากกว่า และนำมาสู่การใช้มาตรการการตอบโต้การทุ่มตลาดเพื่อปกป้องอุตสาหกรรมภายในของตนจากการแข่งขันที่เกิดขึ้นจากการนำเข้าสินค้าที่เพิ่มขึ้น เป็นที่ชัดเจนว่าการใช้มาตรการปกป้องเหล่านี้บรรเทาผลประโยชน์โดยตรงที่ควรได้รับจากการเปิดเสรีทางการค้า ดังนั้นจึงมีความสำคัญเป็นอย่างยิ่งที่ประเทศต่างๆ โดยเฉพาะอย่างยิ่งในกลุ่มประเทศที่พัฒนาแล้วใน OECD และกลุ่มประเทศในยุโรปและเอเชียกลางควรเพิ่มความตั้งใจอย่างแท้จริงในการเปิดเสรีทางการค้า และลดการใช้มาตรการการตอบโต้การทุ่มตลาด

I. Introduction

The World Trade Organization (WTO) has succeeded in reducing tariff barriers among member countries, especially in regards to the use of import tariffs on merchandise trade. Due to this success, many countries have rapidly turned to other forms of trade barriers to protect their import-competing sectors. The most widespread type of protection is anti-dumping measures. Since 1980, there have been more complaints under the anti-dumping statute than under all other trade laws combined (Blonigen and Prusa, 2001), and the number of anti-dumping investigation filings has increased substantially¹. Anti-dumping has emerged as a leading obstacle to the free and fair trade system established under the GATT/WTO (Prusa, 2005).

The patterns of anti-dumping use changed dramatically over the last two decades. In the early 1980s, only eight countries filed anti-dumping actions, in which more than 97 percent of the filings were from the “major four countries”: Australia, Canada, the EU, and the U.S.². Since then, there has been an unprecedented rise in anti-dumping usage in other countries around the world, especially among developing countries. As calculated by Baruah (2007), more than 60 percent of total anti-dumping disputes in 2003 were

¹ As reported on the WTO website, there were 366 cases reported for antidumping investigation in 2001, more than double the 157 cases reported in 1995.

² For a review and discussion on recent trends in worldwide antidumping use, see Prusa (2005).

initiated by developing countries. There has been a noticeable shift of anti-dumping usage from rich to poor countries (Prusa, 2005).

Moreover, world regional anti-dumping filing shares changed significantly between 1995 and 2006 (Figures 1 and 2). For instance, the European and Central Asian regions had a larger share of anti-dumping initiations, whereas the share of initiations by OECD countries was quite stable during the same period. One of the interests of the current study is to examine what contributing factors underlie the shift of worldwide anti-dumping filing shares in each region.

Although an analysis of the factors influencing anti-dumping use appears to be one of the most popular international trade topics, there have been few empirical works focusing on developing countries, as most existing research is focused on the experiences of the major four countries (e.g., Feinberg, 1989; Knetter and Prusa, 2003)³. It is inappropriate for one to expect that the findings would be the same for other countries, especially when comparison countries are dissimilar, as well as when political perceptions on anti-dumping measures are different. Hence, the literature focusing on developing countries becomes more important for current research.

As stated, the surge in the use of anti-dumping measures is found to be associated with the success of GATT/WTO in reducing world tariff barriers. Thus, a link between trade policy and anti-dumping usage would be expected. Early attempts to empirically examine the determinants of macroeconomic factors, including trade policy, on anti-dumping frequency have been made by Irwin (2005) and Aggarwal (2004). Irwin (2005) focused on various determinations of anti-dumping filings in the U.S. and found that an

³ For a comprehensive review of the literature on antidumping, see Blonigen and Prusa (2001).

increase in the average tariff rate leads to more anti-dumping filings. However, his findings are inconsistent with those of Aggarwal (2004), who used panel data for 99 countries over the period of 1980-2000 and found a negative relationship between the average tariff rate and the frequency of anti-dumping use in developing countries, whereas the relationship was found to be insignificant for developed countries. Aggarwal's findings are contrary to the conventional view, in which anti-dumping is considered to be a tool of administered protection used against the prevailing trade liberalization. Although a shift in anti-dumping usage away from developed countries is obvious, developed countries are still the major users of such measures⁴. Hence, a significant relationship between trade policy and anti-dumping filings in developed countries is expected.

The current study further explores the relationship between trade policy and anti-dumping use, both theoretically and empirically. First, a theoretical link is developed to identify possible motives of anti-dumping usage regarding a change in tariff policies. Then, the relationship between the tariff rate and number of anti-dumping filings, categorized by regions where countries reside, is empirically examined. A negative binomial model is used for the estimation and the data include an unbalanced panel of 96 countries from 1995-2005. The findings will contribute to a better understanding of the change over time in anti-dumping patterns in different world regions.

The current paper is organized as follows. In the next section, a theoretical model linking tariff policy and the use of anti-dumping measures is presented, after which the link is examined empirically. The model specification is laid out in the third section,

⁴ See Table 3 in Prusa (2005).

while the data and empirical issues are discussed in the fourth section. The fifth section contains the empirical findings, and concluding remarks are presented in the final section.

II. Theoretical links between tariff policy and anti-dumping

A theoretical model is developed in a similar manner as the framework of Knetter and Prusa (2000). Instead of linking the exchange rate and anti-dumping filings as Knetter and Prusa have done, this study modifies their model to create a link between tariff policy and the criteria for anti-dumping filings. Tariff policy is assumed to be proxied by an Ad Valorem import tax.

Basically, there are two firms involved, both of which produce similar products: one domestic and one foreign export firm. The domestic firm supplies all of its production to the domestic market entirely, while the foreign firm produces in its home country and then exports its product to the domestic market. However, consumers perceive some differences among the products of each firm. Thus, the products are considered to be close but not perfectly substitutable. In addition, each firm may possess some degree of market power, and has the ability to set its own price.

Let π_D denote the domestic firm's profit and π_F denote the foreign firm's profit from exports. The foreign firm is charged an Ad Valorem import tax rate (t) on its exports so that its after-tax export price (q) is defined as

$$q = (1 + t)q_0,$$

where q_0 is the foreign firm's before-tax sale price. The domestic and foreign firms maximize their profits:

$$\pi_D(p, q) = pX(p, q) - C_D(X(p, q)), \quad (1)$$

$$\pi_F(p, q, t) = \frac{q}{(1+t)} Y(p, q) - C_F(Y(p, q)), \quad (2)$$

where p is the domestic price; $X(Y)$ is the domestic (foreign) firm's quantity demanded; $C_D(C_F)$ is the domestic (foreign) firm's cost function assuming a strictly increasing cost function; and π_D and π_F are denominated in the domestic currency.

The first order conditions are:

$$\frac{\partial \pi_D}{\partial p} = X + p \frac{\partial X}{\partial p} - C'_D \frac{\partial X}{\partial p} = 0, \quad (3)$$

$$\frac{\partial \pi_F}{\partial q} = \frac{1}{(1+t)} \cdot (Y + q \frac{\partial Y}{\partial q}) - C'_F \frac{\partial Y}{\partial q} = 0, \quad (4)$$

where $C'_D(C'_F)$ is the marginal cost of domestic (foreign) production. This study

assumes that the sufficient second order conditions are met, in which $\frac{\partial^2 \pi_D}{\partial^2 p} < 0$

and $\frac{\partial^2 \pi_F}{\partial^2 q} < 0$. In addition, the second order partial derivative of its own price effects on

profits must be greater than the second order partial derivative of the cross-price effects on profits to guarantee the unique solution. Since both products can be substituted to some degree, the second order partial derivative of the cross-price effects on profits is positive.

In order to derive the effects of an import tariff (t) on the domestic and foreign firms' prices, totally differentiating equations (3) and (4) with respect to import tariff and solving for the effects of an import tariff on both prices yields:

$$\frac{\partial p}{\partial t} = -\frac{1}{|J|} \cdot \frac{\partial^2 \pi_D}{\partial p \partial q} \cdot \frac{1}{(1+t)^2} \cdot (Y + q \frac{\partial Y}{\partial q}) > 0, \quad (5)$$

$$\frac{\partial q}{\partial t} = \frac{1}{|J|} \cdot \frac{\partial \pi_D^2}{\partial^2 p} \cdot \frac{1}{(1+t)^2} \cdot (Y + q \frac{\partial Y}{\partial q}) > 0, \quad (6)$$

where J is the Jacobian matrix of the first order conditions. Since $q_0 = \frac{q}{(1+t)}$,

$$\frac{\partial q_0}{\partial t} = \frac{1}{(1+t)^2} \cdot ((1+t) \frac{\partial q}{\partial t} - q) = ? . \quad (7)$$

There are two basic requirements to pursue anti-dumping lawsuits. First, “less than fair value”, or LTFV, occurs when foreign exporters are found to set the price of a product either below the normal price it charges in other markets or below the cost of production plus a normal profit. Second, “material injury” occurs when the domestic industry is found to suffer from dumped imports. The basic requirement for the determination of such injury is that there must be evidence of the volume and price effects of dumped imports and a consequent impact of dumped imports on the domestic industry.

Thus, given the theoretical findings above, a reduction in an import tariff reduces both the domestic firm’s price (p) and the foreign firm’s export price (q), whereas when the domestic firm lowers its price, the profits of the domestic firm would be expected to decrease. Under such circumstances, the foreign firm is more likely to be guilty of material injury.

For LTFV determination, although the export price (q) is expected to decrease due to a lower tariff rate, it is not clear whether the firm’s sale price (q_0) will decrease. If a foreign firm decides to increase its sale price (since it possesses some market power), an affirmative LTFV determination would be less likely. On the other hand, if the sale

price is decreased, it would be more likely for a foreign firm to be guilty of the LTFV determination.

The number of anti-dumping filings is presumed to have a positive relation with the likelihood of affirmative LTFV and injury determinations. Since the effects of a lower tariff rate on the LTFV determination are unclear, tariff liberalization has an ambiguous impact on the number of LTFV anti-dumping filings. On the other hand, as the profits of domestic firms decrease due to lower tariff barriers, the likelihood of filings related to “material injury” would increase. This is in a line with the view that anti-dumping measures are used to ensure some level of protection for the domestic industry against a dramatic surge in import competition.

Since the relationship between tariff policy and anti-dumping usage is theoretically ambiguous and may differ in each world region, the empirically comparative analysis of anti-dumping use is very important. In the next section, factor determinations of anti-dumping filings in different world regions are empirically examined.

III. Empirical model specification

As suggested by Knetter and Prusa (2003), the number of anti-dumping filings is determined by real exchange rates, the filing country’s GDP, and the GDP of the rest of the world. This study augments the standard framework by adding a tariff policy variable, measured by the average tariff rate, to examine the effects of tariff liberalization on anti-dumping filings. The model specification of anti-dumping filings in country i in the year t is:

$$(\quad) \quad (\quad) \quad (-) \quad (\quad)$$

$$AD_{it} = f(REER_{it}, GDP_{it}, WGDP_{it}, Tariff_{it}),$$

where

AD_{it} = the number of anti-dumping initiations,

$REER_{it}$ = the real effective exchange rate,

GDP_{it} = the domestic real GDP (in 2000 constant dollars),

$WGDP_{it}$ = the real GDP of the rest of the world (in 2000 constant dollars), and

$Tariff_{it}$ = average tariff rate (percentage).

A change in the real exchange rate has theoretically ambiguous effects on the number of anti-dumping filings. As shown in Knetter and Prusa (2000), a real appreciation of the domestic currency increases the possibility of “material injury”, but reduces the chance of LTFV. Knetter and Prusa (2003) found a positive relationship between the real effective exchange rate and anti-dumping filings, using data on the four primary anti-dumping users. On the contrary, using U.S. data, Feinberg (1989) found an inverse relationship.

An increase in the domestic import country’s GDP has an ambiguous impact on the number of filings. Countries in a recession are more likely to file anti-dumping complaints, as the probability of an affirmative “material injury” increases. In addition, if a foreign firm lowers its price in order to maintain its level of exports, it is more likely for a foreign firm to be guilty of the LTFV determination. However, due to differing political pressure, it is possible that import countries with higher GDP may use more anti-dumping to protect the domestic industry. Thus, the relationship between the filing country’s GDP and anti-dumping use is unclear.

An increase in the GDP of the rest of the world is hypothesized to have a negative impact on the use of anti-dumping measures. An exporting foreign firm in a recession economy may decide to lower its export price in order to stabilize its excess supplies in the home country. Then, an increase in the possibility of LTFV filings would be expected. Finally, as shown in the theoretical section, a change in tariff policy has theoretically ambiguous effects on the number of anti-dumping filings.

IV. Data and empirical issues

Data on explanatory variables are extracted from the World Bank's *World Development Indicators (WDI)*-2007 CD-ROM, and anti-dumping initiation filings per year are collected from the WTO website⁵. In this analysis, an unbalanced panel dataset of 96 reporting countries over the period 1995-2005 is available.

The real effective exchange rate is defined as the nominal exchange rate adjusted for the effects of inflation by multiplying the ratio of the reporting country's consumer price index to another major country's consumer price index, where the U.S. is the base country in the current study. The average tariff rate is measured by the ratio of customs and other import duties to the total imports of the reporting country.

For the purpose of a comparative analysis, this study classifies countries according into four regions: 1) East Asian and Pacific region, 2) European and Central

⁵ www.wto.org.

Asian region, 3) Latin American and Caribbean region, 4) countries in other regions, and 5) OECD countries⁶.

A dummy variable for developing countries, taking a value of one for developing countries and zero otherwise, is added to the model to capture the effects developing countries have on the number of anti-dumping filings⁷. This study also adds an interaction term between the tariff variable (*Tariff*) and the dummy variable for developing countries (*Developing*). A negative coefficient on the interaction term (*TariffxDeveloping*) indicates that anti-dumping usage in developing countries is less sensitive to a change in tariff policy compared with less developed countries.

The number of anti-dumping initiation filings is based on non-negative count data, and the negative binomial model is used for the estimation. The negative binomial model is an extension of the Poisson model, which allows for an over-dispersion structure, in which the variance of a dependent count variable is greater than its mean⁸. Due to the nature of panel data, both fixed- and random-effects estimators are employed to accommodate heterogeneity across countries⁹.

⁶ The list of countries identified in each category follows the classification on the World Bank's *WDI-2007* CD-ROM.

⁷ As identified by the World Bank, developing countries are identified by low and middle income countries. See www.worldbank.org/depweb/english/beyond/global/glossary.html.

⁸ See Greene (2003) and Cameron and Trivedi (1998) for more details on the treatment of econometric models for count data.

⁹ Note that the number of observations is higher in the random-effects estimator. This is because all countries with one observation were excluded in the fixed-effects estimator.

V. Empirical findings

Tables 1 and 2 present the econometric results of the random-effects estimator, and the results of the fixed-effects estimator are presented in Tables 3 and 4. Although the results of both estimators are reported, they are similar. Hence, the following analysis is based on the random-effects estimation, in which the findings can be analyzed as follows.

Firstly, when the pooled data of all countries is used, it appears that the real exchange rate variable is not robustly and significantly related to the number of filings. However, when the model is estimated separately for each region, an appreciation of the real exchange rate for countries in the East Asian and Pacific regions and in the European and Central Asian regions leads to more use of anti-dumping measures, whereas the impacts in other regions are insignificant.

Secondly, for the domestic GDP variable, the estimated coefficients are significant and have a positive sign. The findings indicate that political pressure related to anti-dumping use may change with domestic GDP levels. Countries with higher GDP have a greater tendency to use anti-dumping measures to protect their domestic industry from import competition. Thirdly, the GDP for the rest of the world variable appears to be negatively related to the number of anti-dumping initiations in most of the model estimations.

Next, considering the tariff (*Tariff*) variable, the estimation results are quite remarkable. When this study uses the pooled data of all countries (Equations 1 and 2), the tariff rate has a robust negative impact on anti-dumping use. As indicated, a one percent

reduction in the tariff rate leads to around a five to ten percentage point increase in anti-dumping filings. Hence, the findings are consistent with Aggarwal (2004).

When this study estimates the effects of tariff liberalization in each world region, the estimated findings are mixed. In the OECD and European and Central Asian countries, anti-dumping initiations appear to increase substantially when the tariff rate decreases. The finding suggests that countries in these two regions have used anti-dumping measures to provide protection for the domestic industries from trade liberalization.

In contrast, the tariff rate appears to have a positive impact on anti-dumping usage in the Latin American and Caribbean countries. A one percent reduction in the tariff rate leads to a 13.4 percentage point decrease in the number of anti-dumping initiations. Thus, the trade liberalization policy in these regions does not induce more use of anti-dumping measures. Note that for the East Asian and Pacific countries, although the estimated coefficients of the *Tariff* variable are negative, all are insignificant.

For the *developing* (dummy) variable in the pooled countries data, developing countries are found to use less anti-dumping measures relative to developed countries. In other words, anti-dumping initiations appear to be higher motivated in developed countries, especially in the European and Central Asian regions. However, in other regions, the effects of developing countries' behavior on anti-dumping use are not significant.

Finally, when the interaction *TariffxDeveloping* variable is added, the estimated coefficient is significantly negative in the European and Central Asian countries as well as countries in other regions. This suggests that anti-dumping usage in developing

countries is less sensitive to a change in tariff rates as compared to developed countries. Hence, anti-dumping motives when tariff policy changes are stronger in developed countries.

VI. Concluding remarks

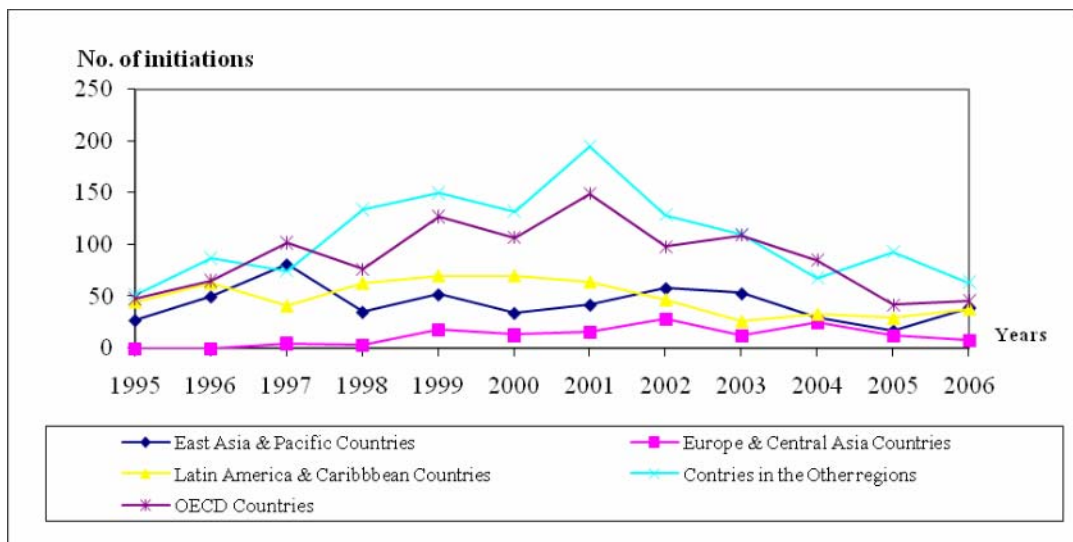
This study examined, both theoretically and empirically, how tariff policy influences the likelihood of anti-dumping filings. From the theoretical framework, although tariff liberalization increases the possibility of filing for material injury, it has ambiguous effects on the LTFV determination. Hence, the overall effect is theoretically ambiguous. It is now a matter of empirical evidence.

The empirical evidence shows that the effects of tariff liberalization on anti-dumping use vary across world regions. For the OECD and European and Central Asian countries, a lower tariff rate is associated with greater use of anti-dumping measures. Anti-dumping appears to emerge as a protection tool among regions with trade liberalization regimes. Developing countries are less motivated than developed countries to use anti-dumping measures. In addition, they are less sensitive to tariff policy changes. In contrast, in the Latin American and Caribbean regions, a decline in the tariff rate leads to a significant reduction in the use of anti-dumping measures. Hence, the findings suggest that Latin American and Caribbean countries have committed more to free trade.

The empirical findings in this study are contrary to the view that developed countries are usually strong advocates of free trade. In addition, they are more likely to be

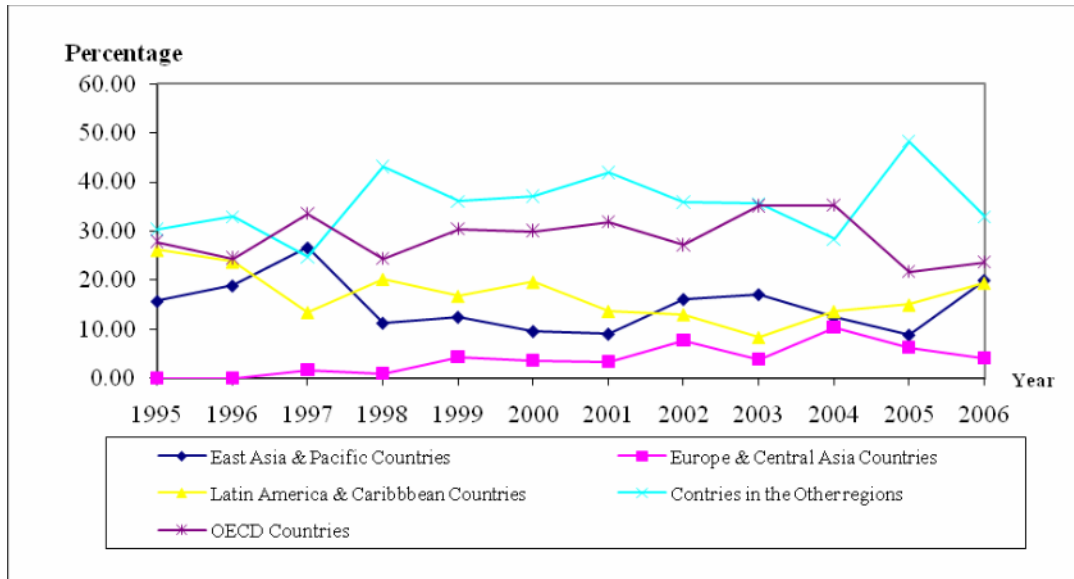
under political pressure to use anti-dumping as a way to protect the domestic industry from a rise in import competition. Clearly, this may hamper the gains from free trade. Therefore, it is important for each country to make a stronger commitment to free trade and to try to minimize anti-dumping abuse, especially in developed OECD and European and Central Asian countries.

Figure 1. Number of anti-dumping initiations by region



Source: www.wto.org. Note that the European community is treated as a single country.

Figure 2. Share of anti-dumping initiations by region



Source: www.wto.org. Note that the European community is treated as a single country.

Table 1. Random-effects negative binominal model.

Dependent variable is the number of antidumping initiations, AD_i .

	All countries			East Asian and Pacific countries			Latin American and Caribbean countries	OECD countries
	1	2	3	4	5	6	7	8
$\ln REER_i$	1.0529 *	1.0071	1.0067	1.0989 **	1.1004 **	1.0952 *	1.1284 **	1.0333
	(1.64)	(0.22)	(0.20)	(2.20)	(2.08)	(1.89)	(2.20)	(0.93)
$\ln GDP_i$	1.5779 ***	1.4689 ***	1.4692 ***	2.2845 ***	2.3167 ***	2.2277 ***	2.1687 ***	1.0976
	(5.30)	(4.65)	(4.64)	(5.63)	(3.59)	(3.10)	(8.01)	(0.77)
$\ln WGDPI_i$	0.2442 *	0.3518 *	0.3606 *	0.0632 **	0.0627 **	0.0775 *	1.5275	0.1960 **
	-(2.41)	-(1.83)	-(1.76)	-(2.31)	-(2.31)	-(1.89)	(0.29)	-(2.43)
$Tariff_i$	0.9193 ***	0.9526 **	0.9989	0.9143	0.9146	0.9917	1.1340 **	0.7306 **
	-(3.60)	-(2.06)	-(0.01)	-(1.23)	-(1.23)	-(0.03)	(2.45)	-(2.11)
<i>Developing</i> (dummy)		0.3687 ***	0.3822 ***		1.0315	1.2573		
		-(3.12)	-(2.82)		(0.08)	(0.32)		
$Tariff_i \times Developing$			0.9528			0.9141		
			-(0.32)			-(0.34)		
$\ln_r$	-0.1168	-0.0509	-0.0534	3.6828	3.7051	3.6828	3.6568	0.1770
$\ln_s$	-0.0944	0.0998	0.0872	4.2143	4.2381	4.2143	4.0841	0.8653
Loglikelihood	-923.57	-918.92	-918.87	-134.51	-134.51	-134.45	-145.37	-458.90
Wald X^2	48.78	68.42	67.85	36.54	36.47	36.74	86.86	9.98
No. of obs.	409	409	409	60	60	60	100	130

Estimates are reported as “incidence rate ratios.” *t*-statistics are in parentheses. ***, **, * denote 1%, 5%, 10% significant levels respectively.

Table 2. Random-effects negative binominal model.Dependent variable is the number of antidumping initiations, AD_i .

	European and Central Asian countries			Countries in the other regions		
	9	10	11	12	13	14
$\ln REER_i$	1.0007 (0.02)	0.9632 (-0.89)	0.9578 (-1.00)	1.2290 (1.30)	0.9788 (-0.10)	0.9784 (-0.13)
$\ln GDP_i$	1.3898 ** (2.16)	1.1910 (1.08)	1.2547 (1.41)	1.3447 *** (2.61)	1.3359 *** (2.64)	1.6479 *** (4.68)
$\ln WGDPI_i$	0.1303 ** (-2.44)	0.2854 (-1.37)	0.2633 (-1.45)	5.8015 (1.28)	8.7052 (1.57)	286.52 *** (2.88)
$Tariff_i$	0.3790 *** (-3.85)	0.4523 *** (-3.06)	0.8018 (-0.61)	0.9618 (-1.09)	0.9794 (-0.57)	36.17 *** (2.91)
<i>Developing</i> (dummy)		0.2736 ** (-2.16)	0.4212 (-1.36)		0.2779 (-1.51)	6.9826 (1.49)
$Tariff_i \times Developing$			0.4112 * (-1.77)			0.0286 *** (-2.92)
$\ln_r$	-0.4211	-0.3795	-0.3692	-0.4581	-0.3135	0.3529
$\ln_s$	-0.1022	0.0945	0.0306	-0.8582	-0.4672	1.3540
Loglikelihood	-375.86	-373.67	-372.28	-232.20	-231.19	-228.23
Wald X^2	26.34	37.83	36.8	16.87	21.85	46.37
No. of obs.	153	153	153	96	96	96

Estimates are reported as “incidence rate ratios.” *t*-statistics are in parentheses. ***, **, * denote 1%, 5%, 10% significant levels respectively.

Table 3. Fixed-effects negative binominal model.Dependent variable is the number of antidumping initiations, AD_i .

	All countries			East Asian and Pacific countries			Latin American and Caribbean countries	OECD countries
	15	16	17	18	19	20	21	22
$\ln REER_i$	1.0508 (1.47)	1.0144 (0.41)	1.0144 (0.40)	1.1234 (0.92)	1.1130 (0.74)	1.0672 (0.41)	1.0818 (0.48)	1.0437 (1.10)
$\ln GDP_i$	1.1732 * (1.74)	1.1237 (1.29)	1.1254 (1.31)	1.5050 (0.82)	1.4008 (0.44)	1.1772 (0.20)	1.9014 ** (2.27)	1.0328 (0.24)
$\ln WGDP_i$	0.3089 ** (1.96)	0.3970 (1.56)	0.4049 (1.51)	0.1726 (1.04)	0.1882 (0.91)	0.3317 (0.53)	0.7770 (0.15)	0.1995 ** (2.24)
$Tariff_i$	0.9309 *** (3.01)	0.9563 * (1.79)	0.9906 (0.06)	0.9868 (0.12)	0.9888 (0.11)	1.1843 (0.52)	1.1574 (1.29)	0.7829 (1.52)
<i>Developing</i> (dummy)		0.4565 ** (2.18)	0.4696 ** (1.97)		0.8627 (0.13)	1.1665 (0.12)		
$Tariff_i \times Developing$			0.9648 (0.22)			0.8287 (0.59)		
Loglikelihood	-660.26	-657.97	-657.94	-106.73	-106.72	-106.54	-103.36	-346.43
Wald X^2	14.64	21.1	21.03	1.59	1.61	2.18	8.8	7.06
No. of obs.	338	338	338	53	53	53	94	129

Estimates are reported as “incidence rate ratios.” *t*-statistics are in parentheses. ***, **, * denote 1%, 5%, 10% significant levels respectively.

Table 4. Fixed-effects negative binominal model.

Dependent variable is the number of antidumping initiations, AD_i .

	European and Central Asian countries			Countries in other regions		
	23	24	25	26	27	28
$\ln REER_i$	1.0007 (0.02)	0.9632 (-0.89)	0.9578 (-1.00)	1.1417 (0.66)	0.8340 (-0.41)	0.8903 (-0.28)
$\ln GDP_i$	1.3898 ** (2.16)	1.1910 (1.08)	1.2547 (1.41)	1.1638 (1.18)	1.1025 (0.66)	1.1500 (0.92)
$\ln WGDPI_i$	0.1303 ** (-2.44)	0.2854 (-1.37)	0.2633 (-1.45)	3.2046 (0.85)	3.5928 (0.95)	8.1253 (1.32)
$Tariff_i$	0.3790 *** (-3.85)	0.4523 *** (-3.06)	0.8018 (-0.61)	0.9559 (-1.23)	0.9579 (-1.22)	2.1777 (0.91)
<i>Developing</i> (dummy)		0.2736 ** (-2.16)	0.4212 (-1.36)		0.3233 (-0.82)	0.8549 (-0.10)
$Tariff_i \times Developing$			0.4112 * (-1.77)			0.4445 (-0.96)
Loglikelihood	-343.77	-266.51	-265.89	-171.89	-171.55	-170.92
Wald X^2	12.4	18.57	18.84	8.31	9.64	10.86
No. of obs.	126	126	126	65	65	65

Estimates are reported as “incidence rate ratios.” *t*-statistics are in parentheses. ***, **, * denote 1%, 5%, 10% significant levels respectively.

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Reference

- Aggarwal, Aradhna, 2004, "Macro Economic Determinants of Antidumping: A Comparative Analysis of Developed and Developing Countries", *World Development*, vol.32, pp.1043-1057.
- Baruah, Nandana, 2007, "An Analysis of Factors Influencing the Anti-dumping Behavior in India," *World Economy*, vol.30, pp.1170-1191.
- Blonigen, Bruce A. and Thomas J. Prusa, 2001, "Antidumping," *NBER Working Paper no. 8398*.
- Cameron, C. and P. Trivedi, 1998, *Regression Analysis of Count Data*, New York: Cambridge University Press.
- Feinberg, Robert M., 1989, "Exchange Rates and "Unfair Trade"," *Review of Economics and Statistics*, vol. 71, pp. 704-707.
- Greene, William H., 2003, *Econometric Analysis*, Person Education Press.
- Irwin, Douglas A., 2005, "The Rise of US Anti-dumping Activity in Historical Perspective," *World Economy*, vol.28, pp.651-668.
- Knetter, Michael M. and Thomas J. Prusa, 2003, "Macroeconomic Factors and Antidumping Filings: Evidence from Four Countries," *Journal of International Economics*, vol. 61, pp. 1-17.
- Knetter, Michael M. and Thomas J. Prusa, 2000, "Macroeconomic Factors and Antidumping Filings: Evidence from Four Countries," *NBER Working Paper no. 8010*.
- Prusa, Thomas J., 2005, "Anti-dumping: A Growing Problem in International Trade," *World Economy*, vol.28, pp.683-700.

Output จากโครงการวิจัยที่ได้รับทุนจาก สกว.

งานวิจัยชิ้นนี้อยู่ในกระบวนการพิจารณาตีพิมพ์ในวารสารวิชาการนานาชาติ *World Economy* โดยหากได้รับการยอมรับในวารสารดังกล่าว ผู้วิจัยจะทำการรายงานให้ สกว. ได้รับทราบต่อไปเพื่อให้เป็นไปตามเป้าหมายของโครงการวิจัยที่วางไว้ แม้ว่าการงานวิจัยชิ้นนี้ยังไม่ได้มีการตีพิมพ์ในปัจจุบัน แต่งานวิจัยชิ้นนี้ได้รับการยอมรับให้ตีพิมพ์ในวารสาร *Global Economy and Finance Journal* ซึ่งผู้วิจัยได้บอกปฏิเสธไปในเบื้องต้น นอกจากนี้ งานวิจัยชิ้นนี้จะถูกนำเสนอในที่ประชุม Annual London Conference on “Money, Economy and Management” ที่ประเทศอังกฤษ ในช่วงวันที่ 3 ถึง 4 กรกฎาคม 2551