

## THE EFFECTIVENESS OF ANTIDUMPING IMPOSITION IN INDONESIA 1996-2015

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### INFORMASI ARTIKEL

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### ABSTRACT:

*With the frequent imposition of anti-dumping (AD) actions carried out by Indonesia over the past two decades, it is necessary to examine what impact these measures have had on the country's imports. Empirically, this study examines the effect of AD measures on Indonesian imports using UN Comtrade data at the 6-digit HS codes product level. The evidence presented in this paper shows that AD does have a significant restriction effect on imports from named countries. AD measures succeeded in reducing the import value of the products concerned by about 126% during the period of imposition. In addition, there is no evidence of trade diversion effects to non-named countries. During the first three years of AD measures, the value of imports to non-named countries decreased by around 53%. It is therefore concluded that Indonesia's AD policy has helped to check unwanted imports and therefore may qualify as effective. The empirical model of the study is estimated using the system GMM estimator.*

**Keywords:** *Anti-dumping, trade restriction effect, trade diversion effect, system GMM estimator.*

### ABSTRAK:

Diberlakukannya tindakan anti-dumping (AD) yang dilakukan oleh Indonesia terhadap negara-negara yang melakukan dumping selama dua dekade terakhir, penting untuk memeriksa dampak apa yang telah dihasilkan oleh kebijakan ini terhadap impor dari negara-negara tersebut. Secara empiris, penelitian ini menguji pengaruh langkah-langkah AD terhadap impor Indonesia menggunakan data UN Comtrade pada tingkat produk kode HS 6 digit. Bukti yang disajikan dalam makalah ini menunjukkan bahwa AD memang memiliki pengaruh pembatasan yang signifikan terhadap impor dari negara-negara yang dikenakan bea masuk AD. Langkah-langkah AD berhasil mengurangi nilai impor produk yang bersangkutan sekitar 126% selama periode pengenaan. Selain itu, tidak ada bukti efek pengalihan perdagangan ke negara-negara yang tidak dikenakan bea masuk AD. Selama tiga tahun pertama kebijakan AD, nilai impor ke negara-negara yang tidak dikenakan bea masuk AD menurun sekitar 53%. Oleh karena itu disimpulkan bahwa kebijakan AD Indonesia telah membantu menekan impor yang tidak diinginkan dan karenanya memenuhi syarat sebagai efektif. Model empiris studi ini diestimasi menggunakan penduga sistem GMM.

**Kata Kunci:** Anti-dumping, efek pembatasan perdagangan, efek pengalihan perdagangan, penduga sistem GMM.

## 1 INTRODUCTION

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Competition is a natural part of international trade and can stimulate innovation. Traders will continue to innovate in order to gain market share and accumulate large profits. However, in achieving these goals, companies or countries sometimes carry out unfair trade practices such as dumping. In this regard, the World Trade Organization (WTO) allows its members to impose trade protection measures to protect domestic producers from imported goods under certain conditions. These security measures include anti-dumping (AD) policies, which are aimed to dealing with unfair imports from certain countries that enter the domestic market.

Although some countries have implemented AD measures to overcome unfair trade practices, their implementation is often not effective (Prusa, 2005). Though AD measures do indeed reduce the number of imported dumping products because import prices are made more expensive (trade restriction effects), the import of these products may not decrease significantly because there are other countries that also produce similar (non-dumped) goods at lower prices than the prices of domestic products. In that case, the source of importation is diverted from the country that is subject to AD action to a country that is not subject to AD measures (trade diversion effects).

During the period 1996-2018, Indonesia conducted 136 initiations of dumping allegations and 28 allegations of safeguards (WTO, 2018). After investigation, there were 63 cases that were eventually subject to AD import duties, which are known as locally as Bea Masuk Antidumping (BMAD). However, Indonesia has never initiated any accusations or imposed anti-subsidy actions in other countries.

With the above background in mind, this study analyzes the effectiveness of Indonesia's AD against its import performance. The impact of anti-dumping policy literature in developing country still

relatively limited (Ganguli, 2008). In Indonesia, Alhayat (2014) examined the effect of AD measures on 18 products subject to AD duties. Using OLS method, he found that during the period of investigation, the Indonesian AD measures negatively affected the overall performance of imported products, but that they were unable to stem an increase in imports. Similar to what Alhayat has studied, this study uses six-digit Harmonized System Codes (HS6) data product. However, we use the change in import data for each country instead of using only 18 aggregate import products. This study also includes other methods besides OLS, such as Generalized Moment of Method (GMM) because of the characteristics of data that include the previous year's import variable (lag variable). The parameter estimation of the dynamic panel data model can be conducted through the OLS method, but the estimated value obtained by this method will be biased and inconsistent due to the lag of the dependent variable being correlated with errors (Anderson & Hsiao, 1982).

By combining unique AD data from the Global Antidumping Database with import data from UN Comtrade at the product level (HS6), we conducted an empirical study of the effectiveness of AD measures in Indonesia from 1996 to 2015. In general, this study will focus on examining two viewpoints on the effects of AD policies, consisting of the effects of trade restrictions and the effects of trade diversion. The rest of this paper will be structured as follows: Section 2 discusses the study's conceptual framework and presents a literature review related to dumping and AD in international trade. Section 3 presents the data and methodology used in this study. Section 4 discusses the study's estimation result and findings. Finally, Section 5 provides the conclusion of the research study.

## 2 CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW

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### 2.1 International Trade

Within the framework of international trade there are several views on fundamental trading theory. Initially, Adam Smith first came out with his flagship ideas about the trade nerve center, namely 'absolute advantage' which emphasizes how a country produces goods smoothly and efficiently compared to other countries. For example, if Indonesia can produce rice and corn more efficiently than Singapore both in terms of natural resources and labor, it means that Indonesia is at an 'absolute advantage' over Singapore in producing rice and corn. As a result, Indonesia will become a country that specializes in producing rice and corn. Several years later, Ricardo (1817) emerged with his critique of the theory of 'absolute advantage' by introducing a new concept of international trade theory which paid attention to the 'opportunity cost'. This means that a country will decide to import rice, for example if the cost of establishing a company to produce rice is higher than importing it from other countries.

### 2.2 Dumping and Antidumping in WTO Framework

Blonigen & Prusa (2016) provide two definitions of dumping. Firstly, it is defined as the practice of selling goods on the export market at a price level that is lower than the exporter's own domestic price level. Secondly, it is defined as the practice of selling goods at a price level on the export market that is lower than the exporter's average cost of production. Furthermore, depending on the reasons for its use, dumping is categorized into two forms. First, the decline of demand in the domestic market due to business cycles may induce companies to sell their excess production to the export market at lower prices, in order to encourage sales. This form is called 'sporadic dumping' because it is associated with economic fluctuations. Second, when a company sells its

products at a lower price on the export market with the aim of suppressing domestic companies or preventing the entry of new competitors, the practice is called 'predatory dumping'.

WTO provisions regarding dumping and AD are basically non-judgmental, but rather provide guidance on how WTO member countries can respond (can or cannot react) to dumping actions. In particular, the provisions regarding AD actions are regulated in Article VI General Agreement on Tariffs and Trade (GATT, 1994) also known as the "Anti-dumping Agreement". The AD agreement allows the government to act against dumping if, after an investigation has proven that dumping is actually occurring, there is a "material" injury to competing domestic industries (producing similar products), and there is a relationship in which dumping causes injury or threatens domestic industries.

Based on the AD agreement, there are three methods used to determine the level of dumping and to calculate the "normal price" of a product. Firstly, the normal price must be calculated based on the selling price of the product in the exporter's domestic market. Secondly, if this information is not available, the calculation of normal prices can use prices charged by exporters in other countries. Thirdly, the normal price can be calculated based on "constructed normal value", which is a combination of production costs, sales costs, administrative costs, and normal gain margins. The agreement also determines how to make a fair assessment between export prices and the normal price, for example in determining exchange rates.

However, calculation of the level of dumping of a product alone is not enough. AD actions can only be implemented if dumping causes material losses to the industry in the importing country that are not due to other factors. Therefore, in the process of investigation of domestic industry losses, the importing country must estimate all relevant economic aspects related to the circumstances of the industry concerned, including the volume and import prices not sold at dumping

prices, contractions in demand or changes in consumption behavior, technological developments, and export performance.

AD measures generally involve the imposition of additional import duties on certain products from the exporting country, to bring the export price closer to normal values or to eliminate domestic industry losses in the importing country. In addition, exporters can voluntarily raise the selling price of a product to an agreed level to avoid AD duties if the investigation shows that dumping has taken place and the domestic industry is experiencing material injury.

Detailed procedures for AD provisions regulate how AD cases must begin, how the investigation must be carried out, and the conditions to ensure that all involved parties are given the opportunity to submit evidence. Five years after the date of imposition, AD measures must end unless an investigation shows that ending AD measures would lead to injury.

The AD agreement also stipulates that WTO member countries must inform the AD Practice Committee about all AD actions from the beginning to the end of the process, immediately, and in detail. WTO member countries must also report all inquiries twice a year. When differences of opinion arise regarding the imposition of AD actions, members are encouraged to discuss them with each other first. If they are still not satisfied with the results of the consultation, they can solve the problem by implementing a dispute resolution procedure provided by the WTO.

AD investigations can be stopped immediately when it is known that the dumping margin is insignificant (less than 2% of the exporter product price). In addition, investigations must also stop if the dumping import volume from one country is considered trivial (less than 3% of total imports of the product); though investigations can continue if a group of countries, each supplying less than 3% of the imports, together account for 7% or more of total imports (WTO, 2020).

In line with WTO regulations, AD provisions in Indonesia are regulated through Government Regulation (PP) No. 34 of 1996

concerning AD Import Duty and Rewards Duty and have been renewed with PP No. 34 of 2011 concerning Antidumping Measures, Actions Trade Safeguard Rewards and Measures. Based on the PP, the government established the Indonesian AD Committee (KADI) as the investigation authority for dumping and subsidies. Procedures for investigations in the context of imposing AD measures are regulated by Minister of Trade Regulation number No.76/M-DAG/PER/12/2012 as amended by Minister of Trade Regulation number No.53/M-DAG/PER/ 9/2013.

### 2.3 Previous Studies

There have been many previous studies that have analyzed the impact of AD measures on trade flows by examining the AD cases of various countries. Prusa (1996) and Malhotra, Kassam, & Rus (2008) use United States (US) AD data; Konings, Vandebussche, & Springael (2001) use European Union (EU) AD data; Ganguli (2008) uses Indian AD data; Park (2009), Lee, Park, & Cui (2013) use AD data of the People's Republic of China (PRC); and Alhayat (2014) and Tjahjasari (2015) use Indonesian AD data. These studies explicitly identified the impact of AD into the effects of trade restriction and the effect of trade diversion, particularly related to imports of products that became subjects of AD measures.

Prusa (1996) examined how effective the impact of AD protection was by using US AD data from the period 1978-1993. The results of this analysis show that AD has led to significant trade diversion from countries accused of dumping into countries not accused of dumping. In addition, the study also found that the greater the AD rates imposed, the greater the trade diversion. Due to the large transfer of import origin, the results of Prusa's study indicate that AD rates have a trade restriction effect that is lower than what is expected by domestic industries. Nonetheless, AD rates are still beneficial because they have a larger restriction effect for cases that are

ultimately subject to AD than for cases that are rejected. AD actions are still significant for the protection of domestic industries because they are able to increase import prices significantly; both for the country of origin of imports that are affected by AD, and for the country of origin of imports that are not mentioned in the AD determination.

Konings, Vandenbussche, and Springael (2001) conducted an empirical study of the impact of the European Union's (EU) AD action on the transfer of imports from countries named in an AD investigation. The extent of the transfer of imports is an indicator of the effectiveness of AD policies to protect domestic industries from imported products. The data used are all cases of AD inquiries in the EU between 1990 and 1995 using the classification of 6-digit Nimex trade data and 8-digit Harmonized System (HS). The study's empirical results showed that trade diversion in the EU as a result of AD actions was relatively small, which differed from the results commonly found in the US. In addition, it was concluded that EU AD policies were more effectively applied to competitive sectors characterized by low levels of industrial concentration.

Ganguli (2008) established an empirical study of the impact of AD in the case of India. The data used in the study was the 1992-2002 period using a 6-digit HS data aggregation, and the study found that AD has a significant effect on the accused country. Though the transfer of trade to a country that was not subject to AD did indeed reduce profits for the Indian domestic industry, overall, the effect of the AD policy assisted in controlling unwanted imports.

Lee, Park, and Cui (2013) empirically examined the impact of US AD actions on the People's Republic of China (PRC), both in bilateral trade between the two countries and US imports from other trading partners. The study found both effects of trade restrictions and trade diversion effects. The impact of trade restrictions only occurs in the short term, and the inquiry process helped to sharply decrease US imports from China. Moreover, the US AD action against China opened

chances for the entry of imported goods from countries other than China. Moreover, AD measures effectively increased the import prices of dumped products. In addition, the greater the AD rate that was imposed, the higher the effect of trade restrictions and trade diversion that was caused.

In Indonesia, Alhayat (2014) examined the effect of AD measures on 18 products subject to AD duties. The study found that, during the period of investigation, the Indonesian AD measures negatively affected the overall performance of imported products, but that they were unable to stem an increase in imports. This shows that the AD measures taken by Indonesia have not been fully effective due to trade diversion from other countries.

Furthermore, Tjahjajari (2015) conducted a study on the impact of the AD policy on Cold Rolled Coil/Sheet imports (CRC/S) in Indonesia. She compares the impact of the AD policy on countries subject to AD duties, and countries not subject to these duties. The results of the study show that the AD measure had a negative significant impact on the volume of CRC/S imports from the five AD-affected countries. On the other hand, there was a positive impact of AD duties on the import volumes of non-AD-affected countries. This result indicates that trade diversion took place from AD-affected to non-AD-affected countries.

### **3 RESEARCH METHODOLOGY**

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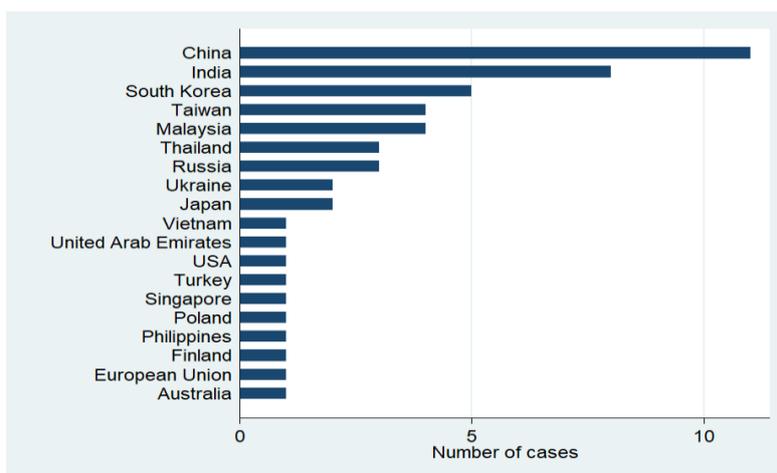
#### **3.1 Data**

The data used in this study are cases that have been subject to definitive AD actions during the period 1996- 2015. The AD cases taken were limited to 2015 because we wanted to know the impact of the imposition of AD measures in the first to third year, where 2018 was the latest year with available annual import data. The main data on AD cases is sourced from the Global AD Database managed by Bown (2015) because it provides detailed information about the type of product, the HS code used, the exporting country

involved, the date of initiation and the date of imposition, and the amount of AD duties. To facilitate the collection of import data related to products subject to AD measures, the classification of 6-digit HS codes is sourced from UN Comtrade.

The case of hot-rolled carbon (HRC) steel plate was the first dumping case handled by Indonesia since the enactment of Government Regulation No. 34 of 1996 concerning Anti-Dumping, Import Duty and

Rewards Duty. Investigation of imported HRC products originating from China, India, Russia, Taiwan, and Thailand began on December 19 1996 and ended with the imposition of AD measures stipulated through the Minister of Finance Regulation on September 29 1997, with BMAD rates ranging from 18% to 42%. The summary of Indonesia's AD measures from 1996-2015 can be seen further in Appendix 1.



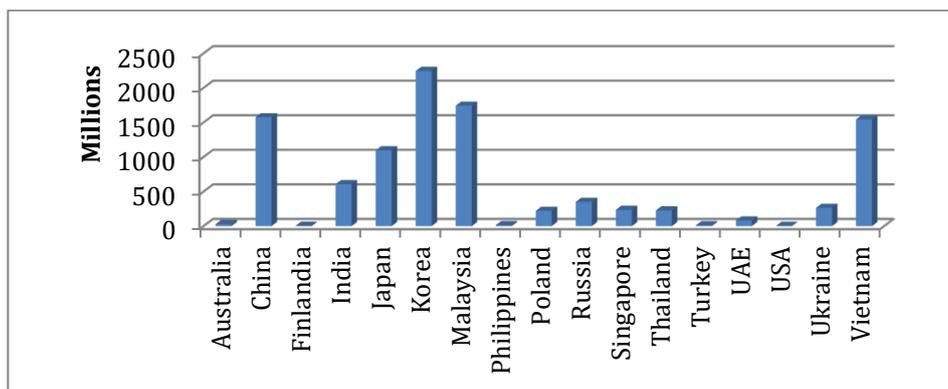
**Figure 3.1** - Countries Most Frequently Named, 1996–2015, Source: Global Antidumping Database 2015, processed using Stata

Figure 3.1 describes the countries that have been subject to AD measures by Indonesia. We can see that China is the most frequently named country subject to AD duties with 11 cases, followed by India and Korea with 8 and 5 cases, respectively.

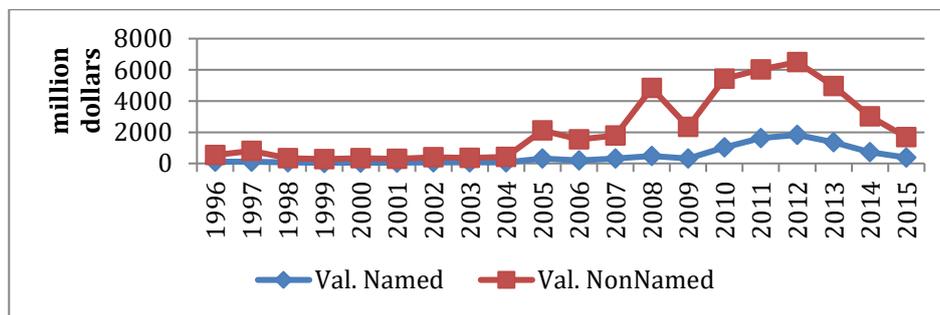
### 3.2 Descriptive Statistics

The graph below provides the value of Indonesia's imports from partner countries

that were subject to AD measures during 1996-2015. As shown in Figure 3.2, it can be seen that the largest import value from named countries was South Korea with US\$2,246 million, followed by Malaysia, China, and Vietnam, respectively. The smallest import value was the USA with US\$3.56 million, followed by Finland, Turkey, and the Philippines, respectively.



(Source: UN Comtrade, processed)  
**Figure 3.2** – Value of Import from Named Countries



(Source: UN Comtrade, processed)  
**Figure 3.3** – Total Value Import Filed by Year

Furthermore, if we describe the total value of imports per year, we can see in Figure 3.3 that the largest import value from named countries was carried out in 2012, at US\$1,832 million dollars. Likewise, the largest import value from non-named countries was in 2012, with a value of US\$6,492 million.

### 3.3 Methodology

This study uses panel data with several estimating methods, such as Common Effect (OLS), Fixed Effects, Random Effects, and Systems GMM. The purpose of using these estimators is to get the best results by comparing the models. In the Common Effect estimator, the model assumes that the intercept and slope coefficients are constant over individual and time, and the error term explains that differences in the intercept and slope coefficients. Thus, in this model there are no individual effects.

Furthermore, the model that assumes the existence of intercept differences for each individual is known as the Fixed Effects Model (FEM). The term ‘fixed effects’ comes from the fact that, although intercepts are different in each individual, each individual's intercept does not vary or is fixed all the time (time-invariant). In addition, the model also assumes that the slope coefficient is constant over individual and time. Estimation is done

by using a dummy variable technique for individuals.

Another model used is the Random Effects Model (REM), which assumes that the variation across countries is random and uncorrelated with the independent variable. In the FEM, each cross-sectional unit has its own fixed intercept value, while in the REM, intercept expresses the average value of all cross-sectional unit intercepts, and component error denotes the deviation of individual intercepts to the average value. Component errors are not directly observable and are also known as latent variables.

The choice of panel data estimation method – whether common effect, fixed effects, or random effects – can be achieved using several tests. Firstly, the F-Test/ Chow Test is used to see whether there are individual effects on the variable. The null hypothesis ( $H_0$ ) in the F-test denotes no individual effect. If the value of F-statistics > F-table value, then  $H_0$  is rejected, which means the best statistical model is the FEM.

Furthermore, the test to choose between random effect and fixed effect models is the Hausman Test developed by Hausman (1978). The main consideration in choosing a random effects or fixed effects model is whether unobserved effect ( $c_i$ ) and explanatory variables ( $x_{it}$ ) are correlated or not. The fixed effects model is consistent if ( $c_i$ ) and ( $x_{it}$ ) are correlated, whereas the random effects model is not consistent if ( $c_i$ )

and  $(x_{it})$  are correlated (Wooldridge, 2002). The T-statistic from the Hausman test has an asymptotic chi-square ( $X^2$ ) distribution. The null hypothesis in the Hausman test is the fixed effects and random effects estimators do not differ substantially. If Hausman statistics  $>$  chi square ( $X^2$ ) table, then  $H_0$  is rejected. The conclusion is that the random effects model cannot be used, so it is better to use the fixed effects model.

In addition to the three statistical panel models discussed above, this study also uses a dynamic panel data model that includes lag as an explanatory variable. The parameter estimation of the dynamic panel data model can be conducted through the OLS method, but the estimated value obtained by this method will be biased and inconsistent due to the lag of the dependent variable being correlated with errors. To overcome this problem, according to Anderson and Hsiao (1982), we can use the Instrumental Variable (IV) estimation method to replace variables that correlate with errors. However, this method only produces parameters that are consistent, but not efficient.

Anderson and Hsiao's method were then developed by Arellano and Bond (1991), who produced an unbiased, consistent, and efficient estimate known as the GMM

$$\ln x_{i,tk}^j = \alpha + \beta_0 \ln x_{i,t-1}^j + \beta_1 \ln x_{i,t-2}^j + \beta_2 (\ln Duty_i \times t_0) + \beta_3 (\ln Duty_i \times t_1) + \beta_4 (\ln Duty_i \times t_2) + \beta_5 (\ln Duty_i \times t_3) + \beta_5 Year_{tk} + \varepsilon_{i,tk} \dots \dots \dots (1)$$

where,

$x_{i,tk}^j$  : value of product imports in AD case  $i$  at the time  $t_k$   
 belonging to the country group  $j$  (named, non-named)

$t_k$  : year related to AD actions on  $k = -2, -1, 0, 1, 2, 3$   
 •  $t_{-2}, t_{-1}$  : years before the AD action was initiated  
 •  $t_0$  : years in which the AD action was investigated  
 •  $t_1, t_2, t_3$  : years in which the AD action was imposed

$(\ln Duty_i \times t_p)$  : interacted duty terms, ( $p = 0, 1, 2, 3$ )

$Year_{tk}$  : calendar year dummies

From the above model, we expect that AD measures will negatively affect the value of imported products at  $t_0-t_3$  from named countries (the effect of trade restrictions on named countries), and have a positive effect on the value of imported products from non-

estimator. Although GMM estimators are efficient, Blundell and Bond (1998) propose estimators that they claim are still more efficient. The reason for this is that the Arellano and Bond method uses only the moment conditions and instrument variable matrix contained in the first difference model. Blundell and Bond suggested the use of additional level information by combining the moment conditions and instrument variable matrix between the two (first difference and level), which will produce a system GMM estimator.

### 3.4 Model Specification and Description of Variables

The econometric model used in this study refers to the specifications of the Ganguli (2008) models. The impact of AD is specified as the impact on imports from countries subject to AD (the effect of trade restrictions), the impact on imports from countries that are not subject to AD (the effect of trade diversion), and the impact on total imports of products subject to AD (overall effect). The econometric model is used as follows:

named countries (the effect of trade diversion) for the same period.

Two immediate lags as explanatory variables are included to control for the size effects of initial imports, while interacted duty terms capture the effect of the duty after the AD action was initiated. Lastly, the year

dummy variables are considered in the model as a control variable for macroeconomic trends.

#### 4 ANALYSIS AND FINDINGS

##### 4.1 Named Countries

Empirical tests were performed by comparing several estimators. Table 4.1 presents OLS regression in column (1), panel regression in column (2), and system GMM in column (3). The Hausman test result (see Appendix 1) shows that a probability value of 0.0095 is less than the 5% significance level, meaning that there is evidence to reject  $H_0$ .

Therefore, it is better to use the FEM than the REM.

Based on the estimation results in column (1) and column (2), the OLS estimator and the fixed effects estimator show a consistency of results, where all variables are statistically significant to the value of the named countries' imports. However, in the system GMM model, only  $t_2$  and  $t_3$  are statistically significant.

**Table 4.1** Regression Results from Named Countries

<i>Variables</i>	<i>OLS</i> (1)	<i>Panel</i> (2)	<i>System GMM</i> (3)
<b><i>Direct Effect</i></b>			
<i>Constant</i>	-106.03** (41.975)	51.352 (49.362)	-206.237 (129.685)
<i>Ln (Import Values in <math>t_{-1}</math>)</i>			1.142*** (0.211)
<i>Ln (Import Values in <math>t_{-2}</math>)</i>			-0.517*** (0.132)
<b><i>Cross Effect = Ln Duty * Time Dummy</i></b>			
$t_0$	-0.279*** (0.100)	-0.199** (0.100)	-0.130 (0.131)
$t_1$	-0.484*** (0.098)	-0.393*** (0.094)	-0.326 (0.215)
$t_2$	-0.551*** (0.106)	-0.479*** (0.103)	-0.428* (0.223)
$t_3$	-0.630*** (0.109)	-0.536*** (0.106)	-0.508* (0.188)
<i>Model</i>		<i>Fixed Effect</i>	
<i>F Statistics</i>	11.27***	9.02***	20.03***

Notes: significance at 1% (\*\*\*), 5% (\*\*), 10% (\*). Standard errors in parentheses.

The best model selection can be seen from the F Statistics row: of the 3 models, model 3 provides the highest F Statistics value. Thus, the model chosen in this study is model 3, which uses the system GMM estimator in column (3).

and system GMM in column (3). The Hausman test result (see Appendix 2) shows that a probability value of 0.8437 is greater than the 5% significance level, meaning that there is not enough evidence to reject  $H_0$ . Therefore, we choose the random effects model for this panel regression.

##### 4.2 Non-Named Countries

Table 4.2 presents OLS regression in column (1), panel regression in column (2),

Based on the estimation results in column (1) to (3), all estimators show a consistency of results, where variables *Cross*

*Effect*  $t_3$  are statistically significant to the value of non-named countries' imports. However, only the system GMM model provides a feasibility test model or F Statistics

< significance alpha 5%. Thus, the model chosen in this study is model 3, which uses the system GMM estimator in column (3).

**Table 4.2** Regression Result from Non-Named Countries

Variables	OLS	Panel	System GMM
	(1)	(2)	(3)
<b>Direct Effect</b>			
Constant	-23.279 (31.278)	-74.426** (34.567)	-48.203 (92.461)
Ln (Import Values in $t_{-1}$ )			0.928*** (0.205)
Ln (Import Values in $t_{-2}$ )			-0.433*** (0.090)
<b>Cross Effect = Ln Duty * Time Dummy</b>			
$t_0$	-0.081 (0.074)	-0.069 (0.100)	-0.163 (0.103)
$t_1$	-0.028 (0.073)	-0.018 (0.094)	-0.143 (0.097)
$t_2$	-0.093 (0.079)	-0.079 (0.103)	-0.180* (0.101)
$t_3$	-0.188** (0.015)	-0.175** (0.106)	-0.212* (0.102)
Model		<i>Random Effect</i>	
F Statistics	1.36	10.81***	34.29***

Notes: significance at 1% (\*\*\*), 5% (\*\*), 10% (\*). Standard errors in parentheses.

#### 4.3 All Countries

Table 4.3 presents OLS regression in column (1), panel regression in column (2), and system GMM in column (3). The Hausman test result (see Appendix 3) shows that a probability value of 0.0012 is less than the 5% significance level, meaning that there is evidence to reject  $H_0$ , so it is better to use fixed effects model. Based on the estimation results in column (1) to (3), all estimators show a consistency of results where variables

*Cross Effect*  $t_3$  are statistically significant to the value of all countries' imports.

There are two models that run a feasibility test model or F statistics < significance alpha 5%, fixed effects and system GMM. Of these two models, system GMM provides the highest F statistics value. Thus, the model chosen in this study is model 3, which uses the system GMM estimator in column (3).

**Table 4.3** Regression Result from All Countries

Variables	OLS	Panel	System GMM
	(1)	(2)	(3)
<b>Direct Effect</b>			
Constant	-34.892 (29.318)	-66.861** (33.837)	-54.522 (78.407)
Ln (Import Values in $t_{-1}$ )			0.942*** (0.241)
Ln (Import Values in $t_{-2}$ )			-0.459*** (0.090)
<b>Cross Effect = Ln Final Duty * Time Dummy</b>			
$t_0$	-0.086 (0.070)	-0.063 (0.066)	-0.136* (0.070)
$t_1$	-0.066 (0.068)	-0.045 (0.065)	-0.138* (0.073)
$t_2$	-0.127* (0.074)	-0.103 (0.070)	-0.180** (0.083)
$t_3$	-0.209*** (0.076)	-0.193*** (0.072)	-0.213*** (0.085)
Model		Fixed Effect	
F Statistics	2.03	2.27	42.54***

Notes: significance at 1% (\*\*\*), 5% (\*\*), 10% (\*). Standard errors in parentheses.

#### 4.4 System GMM Estimates

##### 4.4.1 Named Countries

The estimation results of equation (3) using the system GMM method are presented in column (1) of Table 4.4 (below). The results are as expected: AD measures have a trade restriction effect on Indonesia's imports from the named countries during the investigation and imposition periods, which is indicated by the negative coefficient on  $t_0$ - $t_3$  variables.

For imports from named countries, an AD investigation of dumped products at  $t_0$  decreases the value of imported products compared to the previous period. This indicates the existence of a harassment effect;

that is, when the AD investigation itself has an effect on imports even though a final decision has not yet been made (Niels, 2003).

In the period of protection ( $t_1$ - $t_3$ ), import values decreased by 32.6%, 42.8%, and 50.8%, respectively. In other words, AD measures succeeded in reducing the import value of the product concerned by about 126% during the period of imposition. However, only import values for years  $t_2$  and  $t_3$  are statistically significant under a 10 percent significance level ( $\alpha = 10\%$ ), while variables  $t_0$  and  $t_1$  are not statistically significant. Furthermore, a continued negative sign indicates a fall in imports.

**Table 4.4** System GMM Estimates

<i>Variables</i>	<i>Named</i>	<i>Non-Named</i>	<i>Overall</i>
	(1)	(2)	(3)
<b><i>Direct Effect</i></b>			
<i>Constant</i>	-206.237 (129.685)	-48.203 (92.461)	-54.522 (78.407)
<i>Ln (Import Values in <math>t_{-1}</math>)</i>	1.142*** (0.211)	0.928*** (0.205)	0.942*** (0.241)
<i>Ln (Import Values in <math>t_{-2}</math>)</i>	-0.517*** (0.132)	-0.433*** (0.090)	-0.459*** (0.090)
<b><i>Cross Effect = Ln Final Duty * Time Dummy</i></b>			
$t_0$	-0.130 (0.131)	-0.163 (0.103)	-0.136* (0.070)
$t_1$	-0.326 (0.215)	-0.143 (0.097)	-0.138* (0.073)
$t_2$	-0.428* (0.223)	-0.180* (0.101)	-0.180** (0.083)
$t_3$	-0.508* (0.188)	-0.212* (0.102)	-0.213*** (0.085)
F Statistics	20.03***	34.29***	42.54***

*Notes: significance at 1% (\*\*\*), 5% (\*\*), 10% (\*). Standard errors in parentheses.*

#### 4.4.2 Non-Named Countries

Column (2) of Table 4.4 presents the system GMM estimates of equation (1) for the non-named countries. The results here are quite similar to the results from the named countries discussed above. The negative coefficient signs of interaction terms indicate that AD measures cause a decrease in import values for non-named countries. This means that there are no indications of import diversion to third countries, which is counter to initial expectations that predicted a positive effect for the non-named countries.

In the period of protection ( $t_1$ - $t_3$ ), import values fell by 14.3%, 18.0%, and 21.2%, respectively. This decline in import values was much smaller than the results of the named countries, which indicates that the imposition of AD duties was successful in reducing the value of imports from named countries.

#### 4.4.3 All Countries

The estimation results for all countries can be seen in Table 4.4 column (3). Total imports declined by 13.6% in the investigation

period ( $t_0$ ). Likewise, in the period of protection ( $t_1$ - $t_3$ ), total imports dropped by 13.8%, 18.0% and 21.3%, respectively. As such, total imports have decreased by more than 66% during the investigation and protection periods. These declines are considered large, although these values are not as large as the decline in named countries.

## 5 CONCLUSION

AD measures are used to deter the import of dumped goods that cause injury to a domestic industry in an importing country. By imposing AD measures, importing countries hope to see a recovery in prices for domestically produced goods. With the frequent imposition of AD actions carried out by Indonesia over the last two decades, it is important to examine what impact these measures have had on imports. Empirically, we have examined the effect of AD measures on Indonesian imports using UN Comtrade data at the 6-digit HS codes product level. The analysis presented in this paper shows that AD

does have a significant restricting impact on imports from named countries. AD measures succeeded in reducing the import value of the products concerned by about 126% during the period of imposition. In addition, there was no evidence of trade diversion to non-named countries. This can be seen from the negative sign coefficient in the year of imposition of AD measures. In the first three years of AD measures, the value of imports to non-named countries decreased by around 53%, which is smaller than the reduction in the value of imports to named countries. Overall, Indonesia's AD policy helps to check unwanted imports and therefore can be considered effective.

AD duties allowed domestic prices and production to increase. It appears that, in line with the aims of AD policies, domestic producers therefore gained from the enactment of AD measures. However, the imposition of AD measures does raise a different concern from the national interest point of view: though such measures are a legitimate method of protecting national industries from unfair trade action, since AD measures can lessen the volume of imports because of the increasing import prices, they can to some extent be

harmful to downstream industries domestically. The overall supply will decrease as the volume of imports decreases, while domestic production is not always sufficient to fulfil domestic demand. In other words, when downstream industries do not reduce import volumes, the cost of production is increased because of the higher price of imports. Therefore, downstream industries suffer from AD implementation. To summarize, then, AD is beneficial for domestic producers as a remedy for unfair trade, but it can at the same time harm domestic users or consumers. Therefore, it is necessary to analyze how much consumers lose and how much producers gain from the imposition of AD duties.

For future research it should be noted that, though this study concludes that AD measures in Indonesia have indeed succeeded in reducing imports and benefiting domestic producers, it is necessary to study the effects of the decline in imports caused by AD policies from the perspective of consumers, by further analyzing economic welfare conditions.

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## APPENDICES

### Appendix 1 Hausman Test for Named Country

b = consistent under Ho and Ha; obtained from xtreg  
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\chi^2(5) = (b-B)' [(V_b - V_B)^{-1}] (b-B) = 15.22$$

$$\text{Prob} > \chi^2 = 0.0095$$

### Appendix 2 Hausman Test for Non-Named Country

b = consistent under Ho and Ha; obtained from xtreg  
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\chi^2(5) = (b-B)' [(V_b - V_B)^{-1}] (b-B) = 2.04$$

$$\text{Prob} > \chi^2 = 0.8437$$

( $V_b - V_B$  is not positive definite)

### Appendix 3 Hausman Test for All Countries

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under  $H_a$ , efficient under  $H_0$ ; obtained from xtreg

Test:  $H_0$ : difference in coefficients not systematic

$$\begin{aligned} \text{chi2}(5) &= (\mathbf{b}-\mathbf{B})' [(\mathbf{V}_b-\mathbf{V}_B)^{-1}] (\mathbf{b}-\mathbf{B}) \\ &= 20.11 \end{aligned}$$

$$\text{Prob}>\text{chi2} = 0.0012$$

( $\mathbf{V}_b-\mathbf{V}_B$  is not positive definite)