The Effect of Trade Openness, Customs Tariffs, Financial Penalty, and Trade Agreements on Trade Misinvoicing

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***ABSTRACT*:**

Trade misinvoicing is one of the illegal practices hiding behind legal trade with the purpose of tax evasion and capital flight. It is estimated that Indonesia had a potential loss of $6.5 billion in state revenue linked to trade misinvoicing in 2016. This study aims to obtain empirical evidence on the factors affecting trade misinvoicing, namely trade openness, customs tariff, financial penalty, and trade agreement in trade activities between Indonesia and its trading partner countries. The analysis was conducted on 83 trade partner countries listed on the UN Comtrade from 2010 to 2019 which were selected through a purposive sampling method; thus 830 observations were obtained. This study engages two-panel data regression models, namely a model with import misinvoicing and export misinvoicing as a proxy for trade misinvoicing. The results of this study indicate that customs tariff, financial penalty, and trade agreement affect import misinvoicing. Furthermore, customs tariff and financial penalty affect export misinvoicing. Meanwhile, trade openness does not affect trade misinvoicing, both from the import and export side.

***Keywords**: customs tariff, financial penalty, trade agreement, trade openness, trade misinvoicing*

ABSTRAK:

Trade misinvoicing merupakan salah satu praktik ilegal yang bersembunyi dibalik perdagangan yang sah dengan tujuan penghindaran pajak dan pelarian modal yang mengakibatkan Indonesia mengalami potensi kehilangan penerimaan sebesar $6,5 miliar pada tahun 2016. Penelitian ini bertujuan untuk mendapatkan bukti empiris mengenai pengaruh faktor *trade openness*, *customs tariff*, *financial penalty*, dan *trade agreement* terhadap *trade misinvoicing* yang terdapat pada perdagangan antara Indonesia dan negara mitra dagangnya. Analisis dalam penelitian ini dilakukan terhadap 83 negara mitra dagang yang tercatat di UN Comtrade selama kurun waktu 2010 s.d. 2019 dengan metode *purposive sampling*, sehingga diperoleh 830 observasi. Penelitian ini menggunakan dua model regresi data panel, yaitu model dengan *import misinvoicing* dan *export misinvoicing* sebagai proksi dari *trade misinvoicing*. Hasil penelitian ini menunjukkan bahwa *customs tariff*, *financial penalty*, dan *trade agreement* berpengaruh terhadap *import misinvoicing*. Selanjutnya, *customs tariff* dan *financial penalty* berpengaruh terhadap *export misinvoicing*. Sedangkan *trade openness* tidak berpengaruh terhadap *trade misinvoicing* baik dari sisi impor maupun ekspor.

Kata kunci: *customs tariff, financial penalty, trade agreement, trade openness, trade misinvoicing*

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1. INTRODUCTION

Illicit Financial Flow (IFF) is one of the main problems that has hindered economic growth over the last few decades, so that its existence has become a concern for policymakers, especially from developing countries. Research conducted by Global Financial Integrity (GFI), a think tank tracking illicit financial flows across national borders, estimates that the total amount of illicit financial flows globally reached the average of $8.8 trillion over the past ten years, with a large amount coming from developing countries. Illicit Financial Flow can be interpreted as a form of transferring money or capital in the form of obtaining, sending, or trading transactions illegally (Baker, 2005).

Given the enormous implications of illicit financial flows for the economy of the country, the efforts to reduce the amount of illicit financial flows are one of the indicators in the achievement of the Sustainable Development Goal, which requires each country to strengthen supervision on the flow of funds into and out of the country to reduce IFF substantially until 2030. As one of the developing countries that having disadvantaged by the existence of IFF, Indonesia has a supervisory mechanism to combat cash smuggling as a part of illicit financial flows. However, the realm of IFF through trade misinvoicing has not been optimally explored.

According to UNCTAD (2016) and GFI (2019), trade misinvoicing is the main route of illicit financial flows. Salomon (2018) also estimates that 87% of IFF activities in developing countries during the period of 2005 to 2014 were caused by trade misinvoicing. There are many reasons why trade misinvoicing occurs, the most common are efforts avoiding to pay import duties and value-added tax (VAT) on imports, moving money abroad, and bringing illicit funds to certain countries (Boyce and Ndikumana 2001; de Boyrie et al., 2007; Beja et al. 2008).

Therefore, trade misinvoicing practices can cause loss of state revenue and endanger international trade policies' objectives. Based on the definition, Forstater (2018) stated that trade misinvoicing is a form of customs and/or tax fraud in which importers and/or exporters deliberately inform the wrong value, amount, and/or type of a trade transaction.

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Global Financial Integrity (GFI), through the trade gap analysis method, reported that the value of trade misinvoicing ranges from $2 trillion to $3.5 trillion with an average annual growth rate between 8.5% and 10.4% during 2005 to 2014 period across developing countries. As for Indonesia, GFI estimated that, in 2016, the country had a potential loss of $6.5 billion in state revenue which is related to trade misinvoicing. The potential loss in revenue represents six percent (6%) of government revenue's total value in 2016.

The estimated total potential loss of revenue of $6.5 billion consists of import and export misinvoicing. In the case of import misinvoicing, the potential loss of state revenue is around $2.5 billion. This amount can be further divided into several income components; the value-added tax (VAT) roundabout $1.2 billion, import duties roundabout $302 million, and a corporate income tax roundabout $1.1 billion. Meanwhile, revenues that could potentially be lost due to export misinvoicing amounted to $3.9 billion. This amount consists of $1.8 billion in corporate income tax that is not collected and $2.1 billion in taxes that are not levied on royalty payments.

World Customs Organization (2018) stated that trade misinvoicing exploits the international trade system in four ways: under-invoicing imports or exports and over-invoicing imports or exports. This economic phenomenon is interesting to be examined as the existence of trade misinvoicing could be the indication of smuggling (Baker, 2014) and it is carried out with economic motives such as tax evasion and money laundering (Buehn and Eichler, 2011). Indonesia has a long history of combating money laundering, smuggling, and profit shifting practices which lead to a low tax ratio. The Financial Transaction Reports and Analysis Center of Indonesia (PPATK) states that the current trend of money laundering is trade-based money laundering, in which money laundering is carried out as if there were legal trade activities, either as export or import (Choi, 2019).

One of the most notorious cases related to trade misinvoicing is the leak of Panama Papers in 2016 where many multinational companies in Indonesia use international trade as an underlying to shift profit and take benefit from offshore tax-havens. Meanwhile, the most recent case related to trade misinvoicing faced by Indonesian customs is the smuggling of 27

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textile containers using falsified documents which occurred in 2020 and had caused millions of lost state revenue. The number of suspicious financial transactions related to the smuggling of goods also has always increased according to PPATK, wherein 2018 there were 32 suspicious financial transactions, which more than doubled from the previous year.

For empirical studies, the estimation on the magnitude of trade misinvoicing is measured using trade gap analysis or commonly known as the partner country method which has been used for over half of a decade, first conducted by Bhagwati (1964). Various studies have been conducted on the factors that affect the magnitude of trade misinvoicing by using the trade gap analysis. Aizenman (2008) proves that trade openness affects the propensity to practice trade misinvoicing in bilateral trade since trade openness provides many opportunities for capital flight through import over-invoicing and/or export under-invoicing. Kar and Freitas (2013) also prove that the increase in trade volume, which is the impact of higher trade openness, provides many opportunities for trade misinvoicing.

Beside trade openness, a factor which can influence trade misinvoicing is customs tariff. Bensassi et al. (2017) reveal that the emergence of trade discrepancies, as an indication of trade misinvoicing, is related to customs tariff's level and complexity; the higher the tariff, the greater the likelihood of a trade discrepancy. It supports the findings of Carrere and Grigoriou (2014), which state that trade discrepancy is consistently higher when the tariff level is high so that the incentive to avoid the tariff is higher as well. The phenomenon of how the tariff may affect the occurrence of trade misinvoicing is interesting for further analysis, primarily how it affects trade misinvoicing in Indonesia, considering Indonesia is one of the countries with low tariffs (World Tariff Profile, 2017). However, the level of customs violations such as smuggling and tariff evasion is still considered high.

To resolve violations in import and export activities, customs authorities have used administrative penalty to create a preventive and deterrent effect in the future. Fisman and Wei (2004) state that an increase in administrative penalty must be inversely proportional to smuggling activities, meaning that the value of administrative penalty affects the perpetrators' decision to practice trade misinvoicing in the context of tax evasion or other criminal acts. Furthermore, Buehn

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and Eichler (2011) also argue that fines can be an effective trade misinvoicing prevention instrument because customs authorities will be able to reduce the risk of financial losses caused by tariff evasion.

It is interesting to see how financial penalty and trade agreement affect the magnitude of trade misinvoicing, considering the maximum penalty is charged significantly in the change of Customs Law in 2006. Lastly, another factor that is deemed to be effective in lowering the magnitude of trade misinvoicing is trade agreements between countries. Indonesia has committed to signing more trade agreements in the foreseeable future with 15 new trade agreements from 2016 to 2019. According to Ekananda (2018), trade agreement is related to the low amount of smuggling in the trade between Indonesia and ASEAN countries.

The number of researches in Indonesia related to the factors that affect the magnitude of trade misinvoicing is still relatively low, hence there is still plenty of room for exploration. The latest research on trade misinvoicing in Indonesia was conducted by Ekananda (2018), who analyzed the effect of administrative penalty in the form of fines and trade agreement on trade misinvoicing using trade gap analysis and panel data regression. Ekananda's research uses ASEAN countries as sample and only analyzed the effect of independent variables on import misinvoicing.

Previously, Patunru and Yubwini (2018) examined the effect of tariff and non-tariff barriers on import misinvoicing to see their correlation with tax evasion and smuggling. In this study, we try to fill the research gap regarding trade misinvoicing in Indonesia by analyzing the relation of the trade misinvoicing determinants which have been described above on two proxies of trade misinvoicing, namely import misinvoicing and export misinvoicing between Indonesia and its trading partners. The export misinvoicing proxy is chosen because previous researches have not put export misinvoicing as a variable that needed to be analyzed further, even though the resulting economic impact also has a significant value.

According to GFI (2019), the tax revenue loss from export misinvoicing is estimated at $4 million, which is greater than the potential revenue loss due to import misinvoicing. Besides, various misinvoicing cases still need to be addressed in the Indonesian export sector, including the falsified notification on the

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number and types of coal exports and the practice of mixing illegal goods with legal export commodities. What we observe is the magnitude of trade misinvoicing which comes from the differences in trade value reported to respective customs authorities in each country. In this sense, our analysis should be viewed as a conservative estimate of trade misinvoicing.

The remainder of this study is structured as follows. Section 2 presents the theoretical foundation and the related relevant literature; Section 3 describes the overall methodology, and the data used in the analysis. Section 4 sets out empirical results and discussion. Lastly, Section 5 contains some brief concluding remarks, recommendations, and further research proposals.

2. LITERATURE REVIEW AND THEORETICAL FOUNDATION

2.1 Customs Union Theory

The Customs Union theory is a theory developed by Jacob Viner in 1950 using a partial equilibrium approach. The theory shows that a customs union can lead to trade creation or trade diversion which involves a shift from domestic production to production in trading partner countries. When a customs union is formed, the price of goods in the domestic market of member countries will change as a result of the reduction and/or elimination of import tariffs. The theory shows that trade creation increases the welfare of a country, while trade diversion tends to decrease welfare.

The difference between trade creation and trade diversion is used as the basis for an implication analysis of the customs union on the welfare of its member countries. It is also an important instrument in the analysis and understanding on the effects of economic integration. According to Oslington (2013) the basic concept of the customs union theory by Viner (1950) is the regulation of a country to reduce trade barriers through reducing and/or eliminating tariffs and non-tariff barrier between unionized countries while still maintaining the principle of protectionism against imports from other non-member countries.

2.2 Tax Avoidance

Tax avoidance is a strategy carried out to reduce the nominal tax in the legal to illegal range depending on determining who has the power or authority (Hanlon and Heitzman, 2010). In line with Dyreng et al. (2008) who explain the definition of tax avoidance as an action or effort taken by a company to reduce the amount of payable tax to improve financial

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performance. According to Mangoting (1999), taxpayers can do several ways to reduce their tax burden, namely tax shifting which means transferring tax burden to another party, tax avoidance which is done by exploiting the loopholes of tax regulation, and tax evasion which is done by violating the provisions of tax regulations.

2.3 The Concept of Trade Misinvoicing

Trade misinvoicing is a method used to illegally move money across national borders by deliberately counterfeiting the value, volume, or quality of international trade transactions and, at least, being carried out by one party in the transaction (GFI, 2019). This usually occurs when exporters and/or importers submit incorrect information or submit inappropriate customs documents to customs authorities when carrying out export and/or import activities. This practice occurs in conjunction with legal trading activities so that supervision and prevention are needed to ensure that international trade activities do not protect illicit financial flows.

Trade misinvoicing occurs when the actual value of exports or imports deviates from the number of exports or imports reported to the relevant authorities (Buehn and Eichler, 2011). According to the World Customs Organization (2018), trade misinvoicing is defined as a deliberate act to falsify the value, volume, and/or classification of an international trade transaction carried out by at least one party conducting the transaction. Trade misinvoicing is one of the methods used to disguise the flow of illegal funds between countries.

2.4 Previous Research

Misinvoicing practices can occur both from the export and import activities, either simultaneously or individually. A transaction will be recorded by both parties conducting the trade, namely the customs authority of the exporter and the customs authority of the importer. The difference in the recorded values between the two can be attributed to an indication of companies engaging in trade misinvoicing practices.

The literature on trade misinvoicing continues to develop with a focus on specific countries. The studies on the determinant of trade misinvoicing are largely influenced by the work of Buehn and Eichler (2011) which found the correlation between black-market premium and trade taxes on the magnitude of trade misinvoicing using trade gap analysis. Patnaik (2012) also examined

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other variables which correlated with trade misinvoicing and found a correlation between trade misinvoicing and capital account openness, customs tariff, trade openness, and level of corruption in a country.

Furthermore, Kellenberg and Levinson (2016) used panel data from 126 countries to determine the effect of GDP, audit standards, customs tariff, and trade agreement on trade misinvoicing. The research found that customs tariff is positively related to trade misinvoicing, while audit standards and trade agreement are negatively related to trade misinvoicing. Dujava-Siranova (2017) used panel data from 194 countries from 2001 to 2015 and found that transaction cost, tax policy, and trade openness are related to trade misinvoicing.

The most recent research related to trade misinvoicing in Indonesia was carried out by Ekananda (2018) who analyzed the import misinvocing practice as an indication of smuggling in the trade between Indonesia and its trading partner countries which are a member of ACFTA. The result finds that there is a negative relation between tariff and maximum penalty with the level of trade misinvoicing. Another recent research related to misinvoicing is conducted by Das, Meriluoto, and Rice (2020) and Gara et al., (2019). Das et al. (2020) found strong evidence that there is export misinvoicing practice in the trade between China and New Zealand aimed to avoid export taxes. Whereas, Gara et al. (2019), using trade data between Italy and its trading partners from 2010 to 2013, found that trade openness, customs tariff, tax rates, and trade agreement affect import over-invoicing and export under-invoicing.

3. OPERATIONAL DATA AND METHODOLOGY

3.1 Operational Data

The data used in this study is panel data which consists of cross-section data of 83 Indonesia's trading partner countries and time-series data in the form of annual data from 2010 to 2019 obtained from UN Comtrade, World Integrated Trade Solution (WITS), and World Bank. Next, the variable of trade misinvoicing (MISIMP and MISEXP) is formed by a gradual process.

First, calculate the trade discrepancy which is obtained from the difference between the export value from partner country to Indonesia (Xjit) and the value of Indonesian imports from partner country (Mijt) within the period of 2010 to 2019 (t) to determine the value of import

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misinvoicing through the following equation:

$$MISIMP_{it} = X_{jit} - M_{ijt} \ldots\ldots\ldots\ldots\ldots (1)$$

Next, calculate the trade discrepancy obtained from the difference between the import value of partner country from Indonesia (Mjit) and the value of Indonesia's exports to partner country (Xijt) to determine the value of export misinvoicing through the following equation:

$$MISEXP_{it} = M_{jit} - X_{ijt} \ldots\ldots\ldots\ldots\ldots (2)$$

Export value is recorded with FOB (Free on Board) where shipping costs are not included in the recorded export value, while import value is recorded as CIF (Cost, Insurance, Freight) where the cost of cargo and insurance is included in the recorded import value. In this study, it is assumed that 10 percent of the real import value is the cost of cargo and insurance. The 10 percent factor refers to the literature of Farzanegan (2008) and Ekananda (2018). Thus, to measure the import misinvoicing value, equation (1) is converted into equation (3) as follows:

$$MISIMP_{it} = X_{jit} - (\frac{M_{ijt}}{1,1}) \ldots\ldots\ldots\ldots\ldots (3)$$

Meanwhile, to determine the value of export misinvoicing, equation (2) is converted into equation (4) as follows:

$$MISEXP_{it} = \left(\frac{M_{jit}}{1,1}\right) - X_{ijt} \ldots\ldots\ldots\ldots\ldots (4)$$

Trade Openness (TO) is often used to measure the importance of international transactions relative to domestic transactions of a country. It also indicates how open an economy is against international trade. TO is measured using the ratio of total exports and imports with other countries to the percentage of Gross Domestic Product (GDP). Trade openness data as the ratio of exports and imports to GDP is obtained from the World Bank database.

Customs tariff (TARIFF) is the average percentage of customs tariff measured by calculating the average between the most favored nation (MFN) tariff and the effectively applied tariff (AHS) applicable to each country / 6-digit-level as used by Stuyanov (2012) and Gara et al. (2019). Data on MFN tariff and AHS tariff are obtained from the World Integrated Trade Solution (WITS) database.

Based on the research by Buehn-Eichler (2011) and Ekananda (2008), the increase in penalty is inversely proportional to misinvoicing activities which can be used as an indication of smuggling. In this study, the financial penalty is measured by the number of

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maximum fines divided by the exchange rate to be converted into dollars and then taken in natural logs.

Trade agreement (TA) is a dummy variable that uses a value of 1 (one) if Indonesia has a trade agreement with a trade partner country and a value of 0 (zero) if there is no trade agreement. We use GDP per capita as a controlled variable as it is typically used as a proxy for the reliability and effectiveness of its statistics reporting system. Figure 1 summarizes the operationalization of variables used in this study.

3.2 Methodology

This research was conducted using quantitative methods in processing and analyzing data with trade misinvoicing between Indonesia and its trading partner countries from 2010 to 2019 as the study's object. We use the purposive sampling method to select the samples by eliminating countries that have insignificant import and export partner share and countries that do not have complete data during the period of observation. Panel data analysis is used in this study due to heterogeneity and fluctuation of trade misinvoicing between Indonesia and its trading partner countries each year.

There are three types of models in panel data analysis namely ordinary least square (OLS), fixed effect model (FEM), and random effect model (REM). To choose between the three-panel data estimation techniques, we conducted three tests, which are 1) Lagrange test Multiplier (LM); 2) Chow test; and 3) Hausman test. Furthermore, a classic assumption test is carried out so that regression results of independent variables to dependent variables obtained are unbiased (Gujarati, 2004). These tests include several steps 1) normality test; 2) multicollinearity test; 3) test heteroscedasticity; 4) autocorrelation test.

Figure 1. Operationalization of variables

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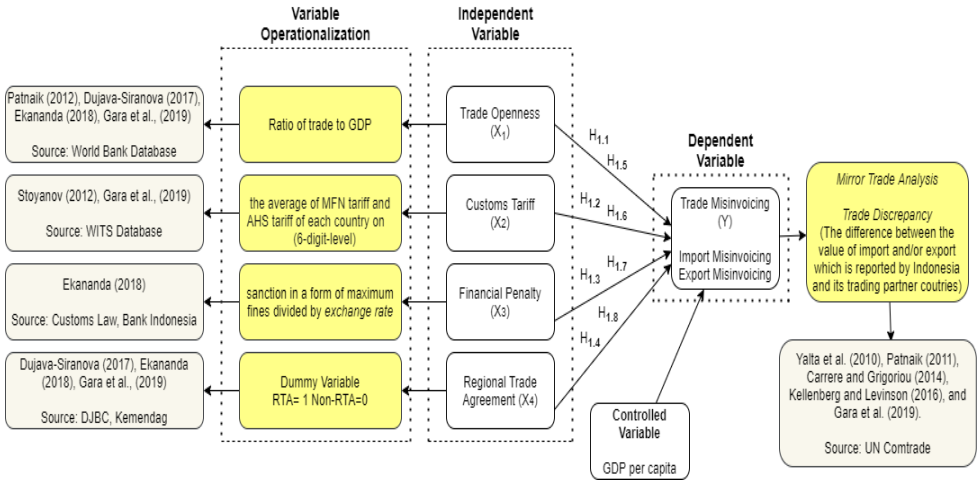

Source: Processed by Authors

the regression results of independent variables to dependent variables obtained are unbiased (Gujarati, 2004). These tests include several steps 1) normality test; 2) multicollinearity test; 3) test heteroscedasticity; 4) autocorrelation test.

Previous studies stated that the practice of trade misinvoicing hides behind the legal trade, that is why the more open a country towards international trade, the more opportunity for importers or exporters to exploit the legal trade through trade misinvoicing. However, it should be noted that the magnitude of trade misinvoicing is closely related to the level of tariff and size of the sanction imposed in international trade (Ekananda, 2018). Therefore, this study takes the focuses on the determinants that affecting the magnitude of trade misinvoicing in the trade between Indonesia and its trading partner countries.

The model developed in this study is schemed to answer the questions of whether or not the determinant of trade misinvoicing as independent variables, namely trade openness, customs tariff, financial penalty, and trade agreement is related to import misinvoicing and export misinvoicing in Indonesia. This model refers to the research of Fisman and Wei (2009), Yalta et al. (2010), Patnaik (2012), and Gara et al. (2019).

$$MISIMP_{it} = \beta_0 + \beta_1 TO_{ijt} + \beta_2 TARIFF_{it} + \beta_3 FINES_{it} + \beta_4 TA_{ijt} + GDP_j + \varepsilon_{it} \quad \ldots\ldots(5)$$

Furthermore, to analyze the relation of independent variables on export misinvoicing, we use model 2 as follows:

$$MISEXP_{it} = \beta_0 + \beta_1 TO_{ijt} + \beta_2 TARIFF_{jt} + \beta_3 FINES_{it} + \beta_4 TA_{ijt} + GDP_j + \varepsilon_{it} \quad \ldots\ldots(6)$$

Where $MISIMP_{it}$ is the discrepancy value in mirror statistics between Indonesia's import and partner countries' export and

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$MISEXP_{it}$ is the discrepancy value between Indonesia's export and partner countries' import. Both discrepancies are taken in absolute value and then taken in natural logs. Next, *t* is the notation for the year 2010 to 2019, *i* is notation of Indonesia, and *j* is notation of partner coutries. TO_{ijt} is the value of trade openness of country *j* in *t* year. $TARIFF_{it}$ is import tariff imposed by country *i* in *t* year, whereas $TARIFF_{jt}$ is the import tariff imposed by country *j* on Indonesia's exports in *t* year. $FINES_{it}$ is a maximum fine imposed by country *i* in *t* year. TA_{ijt} is a dummy trade agreement taking the value of 1 if country *j* is a member of a trade agreement with Indonesia and 0 if country *j* is not a member of a trade agreement.

This study uses bilateral trade data from 2010 to 2019 which results in 830 state-year data. The data has characteristics of time series and cross-section data since it consists of several years of observation across many countries, thus, the observation data in this study is considered as pooled (panel) data.

4. RESULTS AND DISCUSSION

4.1 Empirical Results

This section explains the results obtained from data processing with regression model which has been determined using a series of tests namely Lagrange Multiplier test, Chow test, and Hausman test. Based on the panel data regression model selection, it can be concluded that the fixed effect model is the selected regression model for model 1, while the random effect model is the regression model selected for model 2. The result of the respective tests used to determine the selected model are presented in Table 1.

In this study, hypothesis testing was carried out on 2 models. Testing of model 1 and model 2 was conducted to test the relation of the independent variables on the dependent variable (two-tailed). The results of the regression test, the coefficient of determination, the results of the F-test, and the t-test in this study are presented in Table 2.

Table 1. Result of LM test, Chow test, and Hausman test

LM Test	**Prob (Both)**	**Model Selected**
Model 1	0,0000	Random Effect Model
Model 2	0,0000	Random Effect Model
Chow Test	**Prob χ2 Value**	**Model Selected**
Model 1	0,0000	Fixed Effect Model
Model 2	0,0000	Fixed Effect Model
Hausman Test	**Prob χ2 Value**	**Model Selected**
Model 1	0,0000	Fixed Effect Model

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Model 2 0,1958 Random Effect Model

Source: Processed from Eviews 10

Table 2. Result of Regression Model

Variable	Model 1		Model 2	
	Coefficient	Prob.	Coefficient	Prob.
C	10,86955	0,0002	18,85068	0,0000
TO	0,119139	0,6190	-0,258824	0,0585 *
TARIFF	-3,617666	0,0051 ***	-0,041395	0,0052 ***
FINES	1,328202	0,0307 **	-1,380910	0,0008 ***
TA	-0,393090	0,0000 ***	-0,055528	0,5657
GDP	-0,806268	0,1157	-1,020034	0,0086 ***
R-Squared	0,952821		0,117768	
Adj. R-Squared	0,947289		0,112415	
F-Statistic	172,2435		21,99894	
Prob. (F-Statistic)	0,000000		0,000000	
Description: *significance at level (0,10), **significance at level (0,05), *** significance at level (0,01)				

Source: Processed from Eviews 10

4.1.1 Coefficient Determination Analysis

The coefficient of determination analysis is used to measure the extent to which a model can explain the variation of the dependent variable. The ability of the independent variables to predict the dependent variable can be determined from the regression results indicated by adjusted R^2 value. From Table 1, it is noted that the R^2 value for model 1 and model 2 in this study is 0.947289 and 0.112415 respectively. It means that the independent variables in model 1 can explain 94.72% of the variance in the value of import misinvoicing. Meanwhile, the independent variables in model 2 can explain 11.24% of the variance in the value of export misinvoicing. Thus, 5.28% of the variance in the value of import misinvoicing and 88.76% of the variance in the value of export misinvoicing is explained by other factors outside the research model. In model 2, such low R^2 is frequently encountered in cross- sectional data with a large number of observations. One generally obtains low R2 due to the diversity of the cross-sectional unit. Therefore, finding low R2 in cross-sectional regression is still reliable as long as the regressors have the correct theoretically expected signs and statistically significant coefficients (Gujarati, 2009).

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4.1.2 Simultaneous Significance Test (*F*-test)

The F statistical test aims to test the relation of the independent variables simultaneously to the dependent variable or at least there is one independent variable that affects the dependent variable. A regression model in which the independent variables collectively or simultaneously can explain the dependent variable is considered a good regression model. From Table 1, it is noted that the probability value of F-statistic is less than α (0.05) with a value of 0.00000 both in model 1 and model 2.

It means that the independent variables simultaneously have a significant effect on the import misinvoicing in model 1 and on export misinvoicing in model 2.

4.1.3 Partial Significance Test (*t*-test)

The partial significance test (*t*-test) aims to test the effect of each independent variable (partial) on the dependent variable. Based on the result of regression presented in Table 1, it can be concluded that three of the four variables in research model 1 are significantly related to import misinvoicing. The regression equation for model 1 is obtained as follows.

$$\widehat{MISIMP}_{ijt} = 10{,}86955 + 0{,}119139\,TO_{ijt} - 3{,}617666\,TARIFF_{it} + 1{,}328202\,FINES_{it} - 0{,}393090\,TA_{it} - 0{,}806268\,GDP_{jt} \quad \ldots\ldots\ldots(7)$$

The estimation result shows that the value of import misinvoicing (MISIMP) will have a value of 10.86955 if the independent variables, namely trade openness (TO), customs tariffs (TARIFF), financial penalty (FINES), and trade agreements (TA) are constant or zero. Furthermore, the estimation shows that the effect of the tariff is negative for import misinvoicing with the coefficient of -3.617666. It means that if the customs tariff increases every 1%, then the import misinvoicing will decrease by 3.61%, assuming other factors remain constant.

Next, the estimation shows that financial penalty is positively related to import misinvoicing, which is contrary to the expected effect. The coefficient value of 1.328202 from the equation obtained reveals that every 1% increase in financial penalty will generate an increase in import misinvoicing by 1.32%, assuming other factors remain constant.

As for the effect of trade agreement to import misinvoicing, the estimation shows a coefficient of -0.393090. The result reveals that there are significant differences in the value of import misinvoicing between countries that are members of a trade agreement with Indonesia and countries that are not. Countries that are a member of a trade

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agreement with Indonesia have a lower value of import misinvoicing by 0.39% compared to non-members, assuming other factors remain constant.

Subsequently, based on the result of regression presented in Table 1, it can be concluded that two of the four variables in research model 2 are significantly related to export misinvoicing. The two variables are tariff and financial penalty. Meanwhile, trade openness and trade agreement are proven not significantly related to export misinvoicing. The regression equation for model 2 is obtained as follows.

$$\widehat{MISEXP}_{ijt} = 18{,}85066 - 0{,}258824\,TO_{ijt} - 0{,}041395\,TARIFF_{it} - 1{,}380910\,FINES_{it} - 0{,}055528\,TA_{it} - 1{,}020034\,GDP_{jt} \ldots\ldots\ldots(8)$$

The estimation result shows that the value of import misinvoicing (MISIMP) will have a value of 18.85066 if the independent variables, namely trade openness (TO), customs tariffs (TARIFF), financial penalty (FINES), and trade agreements (TA) are constant or zero. Furthermore, the estimation shows that the effect of the tariff is negative for export misinvoicing with the coefficient of -0.041395. It means that if customs tariff in the destination country increases every 1%, then the export misinvoicing will decrease by 0.04%, assuming other factors remain constant.

Next, the estimation shows that financial penalty is negatively related to export misinvoicing, which corresponds to the expected effect. The coefficient value of -1,380910 from the equation obtained reveals that every 1% increase in financial penalty will decrease export misinvoicing by as much as 1.32%, assuming other factors remain constant.

4.2 Discussion

4.2.1 Trade openness on trade misinvoicing

Based on the results of hypothesis testing, it is noted that trade openness is not related to trade misinvoicing both in import or export activities. The result of this study supports the findings of other studies by Cerra et al., (2005) which conduct research on the determinants of trade misinvoicing in 134 developing countries with a period of 32 years and found that trade openness had no significant effect. However, the results of this study are different from the previous research such as Buehn and Eichler (2011) and Ekananda (2018) which found that trade openness is related to import misinvoicing. The difference between the results of this study and the initial hypothesis is presumed to be caused by several factors including economic conditions, the geographical location of

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the research object, and the number of samples used.

According to Caballero (2009), as quoted from Gupta (2018), developing countries tend to have increased economic integration which will attract capital flows to enter and/or leave the country. However, Pitt's model (1981) also explains that the occurrence of trade misinvoicing is not solely caused by high trade openness but is accompanied by low transparency of the trading system itself. This is supported by the research of Qureshi (2016) which states that the relation of trade openness and trade misinvoicing is determined by the tightness of the supervision system on international trade and how open the financial sector of a country. Furthermore, Kellenberg and Levinson (2016) states that in terms of a high level of exports and imports which can be reflected from the value of trade openness, the value of export misinvoicing can experience a decrease or increase depending on how auditing and supervision standards are in the country.

Pitt's model is also supported by the research from Oley and Adi (2018) which states that the value of export misinvoicing is increasing along with the increase in export activities but also accompanied by weaker transparency and regulation from the government. Thus, it is safe to presume that there are other variables that determine the effect of trade openness on trade misinvoicing such as transparency and the effectiveness of the government in conducting trade supervision. The result of this study indicates that although theoretically, an economic integration can increase the value of trade openness, that is not always followed by an increase in the magnitude of trade misinvoicing if there are strong auditing standards, effective supervision, and proper regulation.

4.2.2 Customs tariff on trade misinvoicing

Based on the result of hypothesis testing, it is noted that customs tariff related to trade misinvoicing. This is in line with the result of previous research by Fisman and Wei (2004), Buehn and Eichler (2011), Aktas et al. (2014), Gara et al. (2019), and Das et al. (2020), which state that customs tariffs have a significant effect on trade misinvoicing. As in previous research, the relation of customs tariff can be positive or negative depending on the type of trade misinvoicing that occurs in a country. The level of tariff imposed by Indonesia on imports is negatively related to import

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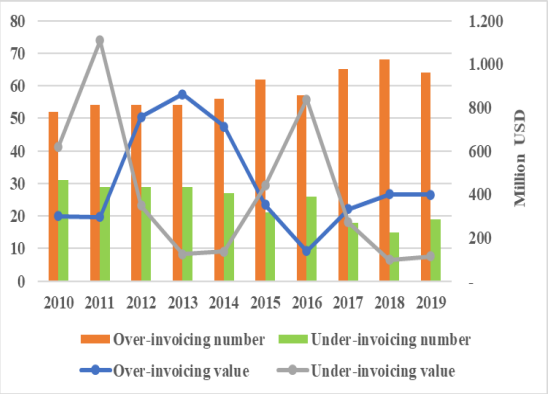
misinvoicing. A negative relation is also found between the relation of tariff imposed on imported products originating from Indonesia and export misinvoicing. Therefore, it means that the lower the tariff rate imposed on imports, the higher the value of trade misinvoicing.

We presumed the reason behind the negative relation is due to the type of trade misinvoicing that dominates the trade between Indonesia and its trading partner countries. In the case of import misinvoicing, it is most likely to be dominated by over-invoicing or reporting the value of goods higher than it should be. It is a common method to avoid capital control, transfer wealth to a tax haven country or a country with a strong exchange rate (Buehn and Eichler, 2011; GFI, 2019). The dominance of import over-invoicing is shown by the graph in Figure 2 as follow.

Figure 2. Type of Import Misinvoicing in Indonesia



Source: Processed by Authors

Low tariffs provide more incentives for importers who wish to take their wealth abroad so that importers can divert large amounts of wealth by paying low import tariffs and gain more profit by doing that. This is in line with the result of previous research by Aktas et al. (2014) and Das et al. (2020) which state that the level of import tariffs has a negative effect on the magnitude of import misinvoicing. According to Aktas et al. (2014), import over-invoicing is carried out to avoid the supervisory procedures by customs authorities since the customs tend to pay more attention to import activities that have a lower value than the market price. Whereas, Das et al. (2020) state that the objective of import over-invoicing is to transfer the wealth to a country that has stronger currency rate or a tax haven country to gain capital gains by evading taxes.

In the case of export misinvoicing, it is most likely to be dominated by under-invoicing or reporting the export value less than the actual goods' value. Export under-invoicing is carried out to avoid export taxes, royalty payment, and corporate income taxes (WCO, 2016). Likewise, the aim of export under-invoicing is to avoid capital control and transfer wealth to countries with stronger

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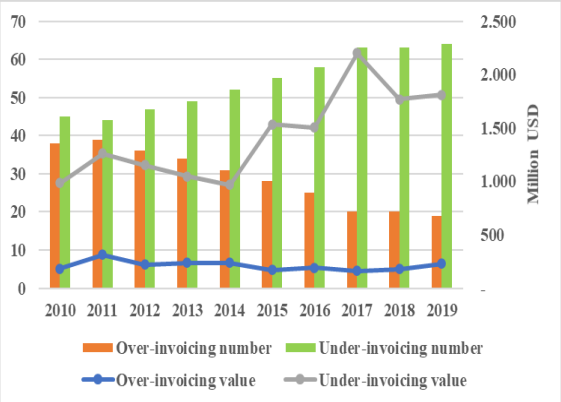
currency rates. Gara et al. (2019) revealed that the existence of export under-misinvoicing can be used as an indication of trade-based money laundering (TBML) by diverting corporate taxable income abroad and eliminating traces of illegal financial flows. The dominance of export under-invoicing is shown by the graph in Figure 3 as follow.

Figure 3. Type of Import Misinvoicing in Indonesia



Source: Processed by Authors

Tax evasion through export misinvoicing is carried out with two purposes, first to avoid higher royalty payment or export taxes for certain commodities, and reduce corporate income tax payments. Based on descriptive statistics, the average value of export misinvoicing has increased quite high from 2014 to 2017. It matches the phenomenon in that year when there was an increase in coal royalty rates from 3% - 7% to 10% -13% which came into effect starting January 2014 (fiskal.kemenkeu.go.id). This indicates that export under-invoicing mostly occurs in Indonesia is aimed at evading royalty payments, especially for coal commodities. The second objective is to transfer capital or wealth to avoid government control. Other than that, the exporters are presumably trying to avoid their tax obligations in Indonesia, which has a higher tax rate. Exporters who will move their capital or wealth tend to choose destination countries that apply relatively low import tariffs so the exporters get maximum profit from transferring their wealth to other countries through export misinvoicing. The import tariffs imposed by other countries can be a cost that will reduce the gain from profit shifting so that export destination countries that apply low import tariffs may provide more incentives for exporters who want to shift their wealth.

Therefore, the result of this study indicates that the level of customs tariff is related to trade misinvoicing that occurred in the trade of Indonesia and its trading partner countries. The negative relation can be explained by the type of trade misinvoicing dominating the trade. In the case of Indonesia, it is dominated by import over-invoicing and export under-

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invoicing. Both types of trade misinvoicing has the purpose to transfer wealth to countries with strong currency or shift profit to tax haven countries.

4.2.3 Financial penalty on trade misinvoicing

Based on the result of hypothesis testing, it is noted that financial penalty is related to trade misinvoicing. The results of this study are in line with previous research by Buehn and Eichler (2011) which states that fines are an important determinant of trade misinvoicing and research by Ekananda (2018) which states that trade misinvoicing is related to the number of fines. The previous research implies a negative correlation between fine and trade misinvoicing; the higher the fines, the lower the magnitude of trade misinvoicing. The negative correlation is proven in the case of export misinvocing in this study. This result is in line with the research by Buehn and Eichler (2011) and Ferrantino (2012) which reveal that fines affect the value of misinvoicing, thus, it can be used by the government as an instrument to reduce the magnitude of misinvoicing. A higher financial penalty is effective in enforcing a deterrent effect to the misinvoicing perpetrators because the fines that must be paid if detected will increase the cost of practicing export misinvoicing. Hence, if the number of fines can significantly reduce the profit obtained from export misinvoicing, the incentive to commit misinvoicing in export activities is expected to reduce as well.

However, in the case of import misinvoicing, fines and the magnitude of misinvoicing have a positive correlation which means that the more amount of financial penalty being imposed, the more likely import misinvoicing to occur. This could be explained using the prospect theory (Kahneman and Tversky, 1979), which shows how people decide between alternatives that involve risk and uncertainty. According to the prospect theory, people tend to be loss-averse when exposed to the risk. Considering the import over-invoicing which dominates the trade misinvoicing in Indonesia is aimed at capital flight and profit shifting, it is reasonable for those importers to maximize the profit gained from misinvoicing.

Therefore, importers who are exposed to the risk of being detected and obliged to pay a large number of fines will most likely try to cover those potential losses by increasing the value of import over-invoicing. Other than that, according to Raskolnikov (2005), the number of fines

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determined for a violation generally fails to consider the risk of the violation being detected so that the offenders tend to choose misinvoicing techniques that are difficult to detect. Thus, higher fines may encourage the perpetrators to choose misinvoicing techniques that are increasingly difficult to detect such as import over-invoicing. That explains why the number of fines is positively related to the value of import misinvoicing.

4.2.4 Trade agreement on trade misinvoicing

Based on the result of hypothesis testing, it is noted that there is a significant difference in the value of import misinvoicing in the trade between Indonesia and countries that are a member of a trade agreement and countries that are a non-member. The result shows that the value of import misinvoicing tends to be lower in the trade between Indonesia and trade agreement member countries. According to the customs union theory, countries that have geographic proximity and high trade frequencies tend to form economic integration in the form of customs unions. This is based on the objective of achieving maximum welfare from trade between member countries by removing various barriers, both tariff and non-tariff. This theory is supported by the research of Das et al. (2020) which shows that trade agreements increase the volume of imports and exports between countries and finds weak evidence of import misinvoicing to avoid tariff and import taxes.

Ekananda (2018), in his conclusion, also explains that the level of import misinvoicing has decreased along with the enactment of the trade agreement between ASEAN countries and China. This is presumably due to countries who are members of a trade agreement, in general, often carry out evaluations of the agreement by sharing the same reporting standards and customs practice standards which may reduce the opportunity of misinvoicing to happen. The result of this study indicates that a trade agreement can be used as a tool to reduce the magnitude of import misinvoicing, especially import under-invoicing which is aimed at avoiding tariffs.

Meanwhile, in the case of export misinvocing, the result obtained shows no significant difference in the value of export misinvoicing in the trade between Indonesia and member countries of a trade agreement with those who are a non-member of the agreement. Kellenberg and Levinson (2014) states that a trade agreement will affect in reducing

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incentives for export misinvoicing if the formation of a trade agreement leads to product standardization and cooperation in the enforcement of international trade activities. In Indonesia, the formation of a trade agreement is aimed at encouraging exports where the existence of a trade agreement will make imported goods originating from Indonesia obtain preferential rates in destination countries, this is expected to increase industrial competitiveness of Indonesia's products (news.ddtc.co.id).

Thus, trade agreement schemes between Indonesia and its trading partners regulate the provisions of the tariff imposed at the time of import. The result of this study indicates that trade agreement does not affect on export misinvoicing due to several explanatory factors including the existence of other variables which may determine the effect of trade agreement on export misinvoicing, namely product standardization and cooperation in enforcing regulations between member countries of a trade agreement. In addition, based on the previous explanation, it is noted that export misinvoicing in Indonesia is presumed to be dominated by export under-misinvoicing aimed at avoiding royalty payments and reducing income taxes. Meanwhile, the trade agreement scheme regulates importation between member countries, with that being said, the trade agreement scheme used by importers does not affect the magnitude of export misinvoicing.

5. CONCLUDING REMARKS

This study aims to determine the effect of trade openness, customs tariffs, financial penalties, and trade agreements on trade misinvoicing from both import and export activities. By using the purposive sampling method, we obtained 830 observations from the trade data of Indonesia and its trading partners from UN Comtrade from 2010 to 2019. The analysis that has been carried out has resulted in several conclusions regarding the determinants of trade misinvoicing in Indonesia. It is proven that trade openness is not related to trade misinvoicing, both from import and export activities. Next, customs tariff is related to trade misinvoicing. This is due to the trade misinvoicing practice in Indonesia is dominated by import over-misinvoicing and export under-invoicing, which is aimed at capital flight and profit shifting. Hence, a lower tariff may increase the incentive for trade misinvoicing as it enables the perpetrators to maximize the profit from such practices.

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Next, the financial penalty is also proven related to trade misinvoicing. In the case of import misinvoicing, higher fines lead to the higher value of misinvoicing due to the tendency of the perpetrators to cover their potential losses which are caused by fines if being detected. On the contrary, for exports, the higher amount of fines will less incentivize exporters to practice misinvoicing as the cost of fines outweighs the benefit. Lastly, the trade agreement is proven to be related to import misinvoicing. Countries which involve in a trade agreement generally have uniformed reporting standards, customs practices, and evaluation mechanisms so the trade discrepancy between countries as a form of import misinvoicing tends to be rare.

We recommend customs authorities consider the role of the determinants of trade misinvoicing analyzed in this study as the criteria to strengthen the risk management formulated by Indonesian customs in the future. Other than that, the customs authority is also expected to strengthen the effectiveness of audit on a transaction where there is a strong indication of trade misinvoicing, especially in the case of import over-invoicing and export under-invoicing. Customs officials are also expected to have adequate competence to recognize the trade misinvoicing motives, techniques, and how to handle said cases, on top of improving the coordination with related parties regarding the detection and supervision of trade misinvoicing.

For further research, it is recommended to use another proxy to measure misinvoicing such as using the price filter method to obtain more comprehensive nuance of trade misinvoicing in Indonesia, as well as adding more potential determinants of trade misinvoicing to examine its effect on four types of trade misinvoicing. We realize that this study still holds several limitations, namely the inability to explained the overall determinants of trade misinvoicing, considering the trade misinvoicing techniques and motives require further detection. The partner country method used in this study can only measure trade misinvoicing which is indicated by the existence of trade discrepancies or differences in the value of exports and imports reported in each country. It is merely used to observe the indication of possible trade misinvoicing, hence, it is deemed incapable of calculating the actual value of trade misinvoicing accurately.

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