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ANTI-AVOIDANCE AND PROFIT SHIFTING IN ASEAN MULTINATIONAL ENTERPRISES: IS IT EFFECTIVE?

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ABSTRACT

Using ORBIS company micro-level data, this paper discussed the effectiveness of anti-avoidance regulation in tackling outbound profit shifting in ASEAN for the period from 2009 – 2018. This paper found that the elasticity of outbound profit shifting to positive tax rate differential is roughly 1.82%, where anti-avoidance effect brings back to profit by 0.55%, Our findings suggest that a moderately strong anti-avoidance level is effective to reduce profit shifting. In contrast, a stringent anti-avoidance level leads to a decreasing effect.

Dengan menggunakan data mikro yang disediakan oleh ORBIS, penelitian ini ini mencoba mengukur tingkat efektivitas peraturan anti penghindaran pajak di ASEAN dalam mencegah pergeseran laba keluar negeri pada periode 2009 – 2018. Penelitian ini menemukan bahwa tingkat elastisitas atas pergeseran laba keluar negeri terhadap perbedaan tarif pajak adalah 1,.82%, dimana efek aturan anti penghindaran pajak dapat mencegah pergeseran profit sebesar hanya sebesar 0.55%, Selain itu, thesis ini juga menyimpulkan bahwa peraturan anti penghindaran pajak dengan tingkat menengah sudah cukup untuk mencegah pergeseran laba. Di lain pihak, aturan yang terlalu ketat akan menurunkan efektivitas peraturan anti penghindaran pajak.

1. INTRODUCTION

The tax policy is the sovereignty of each country in the world. A Country could choose the level of the tax rate, which they think is optimum (Gurria, 2014). In setting the tax rate, the country considers the rate that in line with its economic policy, sometimes by sacrificing tax revenue (Compact, 2013). For example, the rate is set low enough to attract Foreign Direct Investment (FDI) (van Apeldoorn, 2018). That is why the tax rates in each country vary. This condition creates differences in tax rates in every country in the world.

The differences in tax rates between countries not only work as an incentive for FDI but also a motivation for Multinational Enterprise ("MNE") to do profit shifting. Profit Shifting is a strategy used by multinational companies to exploit loopholes and tax rate differences across jurisdictions by artificially shift profits to lower or no tax jurisdictions without any economic or business reason. By shifting the profit from high tax countries to low tax countries, Multinational Enterprises able to maximize their global profit after tax.

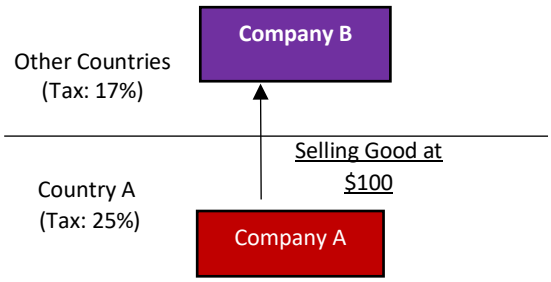
The practice of profit shifting distorts competition between multinationals and domestics companies, decreases tax fairness, reduces tax revenue, creates inefficient capital allocation, and negatively impacts economic growth (Overesch, 2007) (Gurria, 2014). Thus, in order to tackle profit shifting, countries have designed a set of tax regulation, which called Anti-Tax Avoidance regulation ("Anti Avoidance") (Miller & Ifs, 2016). The anti-avoidance is a set of tax policies that aim to tackle the practice of tax avoidance.

This paper discusses the empirical evidence of the effectiveness of anti-avoidance regulation in ASEAN countries from 2009 to 2018. Moreover, this paper attempts to quantify the strength of anti-avoidance regulation in ASEN using the methodology designed by Johansson (Johansson & Sorbe, 2016).

1.1. Multinational Enterprises And Profit Shifting

A Multinational Enterprise ("MNE") is a group of two or more companies that are located and operate in different jurisdictions (OECD, 2015b). By having operated in different jurisdictions, MNEs can exploit different statutory corporate income tax (CIT) rates. The difference in the CIT rate between countries creates the opportunity for an MNE to maximize its global profit by lowering tax paid (Armstrong, Blouin, & Larcker, 2012) (Omar & Zolkaflil, 2015) (Ratan, 2015).

MNE uses strategy by shifting profit from a high tax jurisdiction to a low or nil tax jurisdiction (Johansson, Skeie, Sorbe, & Menon, 2017) (Dharmapala, 2014a). To illustrate, imagine Company A, which located in 25% tax rate jurisdiction transacts with affiliated company B in other countries, which has a tax rate of 17%. Company A sells $100 goods to company B. Without profit shifting, the overall group tax is $8.4, while with only $10 profit shifting, the group tax reduced to $7.60, resulting in $0.80 tax saving.



Entity	Without Profit Shifting	With Profit Shifting ($10)
Company A		
Revenue	$ 100	$ 90
Cost + Expense	$ 80	$ 80
Profit	$ 20	$ 10
Tax 25%	$ 5	$ 2
Company B		
Revenue	$ 120	$ 120
Cost + Expense	$ 100	$ 90
Profit	$ 20	$ 30
Tax 17%	$ 3.40	$ 5
Group Tax Burden	$ 8.40	$ 7.60
Tax Savings		**$ 0.80**

Figure 1 Profit Shifting Mechanism

Practically, profit shifting can be done in various forms (Johansson et al., 2017). First, an MNE may conduct related party transactions (transfer pricing), in which the price agreed is deviating from the market price (arm's length price).

Second, MNE may design excessive deductible interest expense through an intra-group loan. The strategy knows as a thin-capitalization.

Third, MNE may use a Controlled Foreign Corporation (CFC). This strategy allows MNE to park undistributed profit in low tax jurisdiction.

Fourth, MNE able to design aggressive tax arrangement which does not have the business motivation, and only intended to obtain a tax benefit.

These arrangements exploit the potential tax loopholes across the country.

Last but not least, MNE able to exploit the tax treaty network between countries. For example, by exploiting the withholding tax on passive income or the determination of permanent establishment.

MNE's profit shifting behavior receives concern from governments around the world. It is a problem because it lowers government revenue (Clausing, 2015). OECD calculates that the global tax revenue loss is between $100 Million to $240 Million annually from profit shifting (OECD, 2015a). However, the problem is not how massive the tax revenue loss is (Ratan, 2015), but the main negative implication is the fairness of the tax regulation (Dharmapala, 2014a). Because only MNE who have access to profit shifting, while Domestic Enterprises do not. It is, therefore, arising problems in the fairness of tax regulation and competition (Buettner, Overesch, & Wamser, 2018)(Sam & Haufler, 2005). In the long term, profit shifting creates an inefficient allocation of resources, hence distorts the capital and labor's rate of return (Overesch, 2007).

In current days, policymakers around the world interested in the discussion on how to design effective tax policies to combat profit shifting (Dharmapala, 2014c). However, only a few of these efforts have been very successful since they did not aim for the fundamental problem. The problem lies in the mismatch of every countries tax policy design. Some countries do set their low rate to attract FDI (OECD, 2007) while sacrificing tax revenues. Empirical evidence shows that countries with a low tax rate might be the destination for inbound profit shifting (Devereux & Griffith, 2003) (Kelly & Graziani, 2015), while countries with higher tax might face outbound profit shifting (Sam & Haufler, 2005).

Nevertheless, over some mismatches that occur, there is a pattern of uniformity in designing tax policy to tackle profit shifting. This set of tax policy known as anti-avoidance (Miller & Ifs, 2016) (Nations, 2017). OECD (OECD, 2013) explains five dimensions of anti-avoidance as follows:

1. Transfer Pricing Regulation. The regulation requires the transaction between related entities in MNE should be following the arm's length price, which is comparable to the market price. The regulation also requires individual MNE to provide documentation of the application of the arm's length principle. The most important is the regulation authorizes the tax authority to make a price adjustment if the price has been proven to deviate from the arm's length principle (OECD, 2015d). However, the level of strictness and documentation requirements is different among jurisdictions.
2. Thin Capitalization Regulation. The regulation limits the excessive interest expense if specific criteria are fulfilled. The excessive criteria may vary across the countries. In practice, The criterion can be in the form of a ratio of debt to equity, or a specific percentage of interest to earning (OECD, 2015c).
3. Control Foreign Corporation (CFC) Regulation. The regulation aims to bring back the income which parked in foreign countries using a mechanism called deemed dividends. However, the regulation is not compatible with certain tax policies, which means that it is not applicable in every country.
4. General Anti Avoidance Regulation (GAAR). The regulation disallows the benefit derived from a tax-motivated scheme which considered aggressive. The regulation specifically targeted to counter a broad scope of profit shiting. A common practice is to deny the benefit from a transaction that does not have economic substance (Johansson & Sorbe, 2016). However, it is difficult in practice, and it is highly reliant on the mellowness of tax authority.
5. Tax Treaty Network and Withholding Tax Rate. Even though this is not anti-avoidance regulation, but it influences MNE behavior in a country. Since the more tax treaties the country has, then the more prone to profit-shifting. For example, MNE could exploit the tax treaty benefit, such as a reduced tariff in the withholding tax rate (Johansson & Sorbe, 2016).

From the MNE perspective, anti-avoidance is increasing the cost of profit-shifting (Dharmapala, 2014b), and increase future tax burden expectation (Ruf & Schindler, 2015) (Mcclure, Lanis, & Govendir, 2016). Moreover, the anti-avoidance may also increase the reputational cost of MNE, since it increases the probability of being audit (Dharmapala, 2014a) (Gallemore, Maydew, & Thornock, 2014).

1.2. Research Question and Gap

Despite the uniformity of the five dimensions of anti-avoidance, the mismatches still exist. Precisely, the mismatches lie in determining the level of strengths and the level of enforcement (Johansson & Sorbe, 2016). Some of anti-avoidance is only serving as a formality, specifically for low tax country. Since low tax country is possibly the destination of inbound profit shifting, and gain benefit from that (Lohse, Riedel, & Spengel, 2014) (Gresik, 2008).

Therefore, the implementation of different anti-avoidance in countries in the world relies on what

becomes the priority, is it tax revenues or is it FDI. Consequently, countries rarely apply the entire set of antiavoidance. Some countries only apply rules which they consider essential, while some implement the entire set of antiavoidance combined with FDI incentives.

However, the big question is whether the application of a full-set and complicated anti-avoidance has a positive impact on tax revenue. Besides, whether the application of complete tax avoidance will effectively reduce the profit shifting practices of MNE, it remains to be answered. As an economist, I was challenged to research in this field, so later we can answer one day that whether the application of a complete and robust anti-avoidance will significantly reduce the practice of profit shifting, or it will bring the opposite effect.

This paper will focus on the evaluation of the anti-avoidance implementation of ASEAN. Some considerations are taken into account in determining why I choose ASEAN. First, tax rates in ASEAN are varied considerably and create a supportive environment for profit-shifting, not only among ASEAN countries but also with countries outside ASEAN. Second, the application of anti-avoidance in ASEAN has a diversity level because what becomes a priority in setting tax rates for each country is different. Last, there was still a few research that focused on anti-avoidance effectiveness, specifically in ASEAN. So, the field is still promising for future research.

To be able to measure the effectiveness of anti-avoidance, this paper will take two steps. First, measuring the index of anti-avoidance robustness. The second step is to measure the profit-shifting elasticity to differences in tax rates. After that, the two results will be integrated into an estimation equation to evaluate the effectiveness of anti-avoidance on profit shifting.

Further, the evaluation of anti-avoidance covered several dimension as follows (Johansson & Sorbe, 2016):

1. The robustness of Transfer Pricing Regulation and Documentation;
2. The strictness of Thin Capitalization Regulation;
3. The Implementation General Anti Avoidance Regulation (GAAR);
4. The Implementation Controlled Foreign Corporation (CFC) Regulation;
5. The Tax Treaty Network and Withholding Tax Rate.

2. LITERATURE REVIEW

We begin the literature review starting from the research on the elasticity of profit-shifting. The first who pioneered the study of profit shifting was Grubert and Mutti (Grubert & Mutti, 1991) and also Hines and Rice (Hines & Rice, 1994). The fundamental theory is that reported (observed) profit is a summation of real profit and shifted profit. Where shifted profit can be positive (inbound shifting) or negative (outbound shifting) (Dharmapala, 2014c). The shifted profit is a response to the incentive for profit shifting, wherein Hines and Rice define as the tax rate difference is between foreign parent countries and observation countries. Using the Bureau of Economic Analysis (BEA) for the year 1982 aggregate country-level data, Hines and Rice found that the profit shifting elasticity of 2.25. The research suggests that if the tax rate observed countries 1% larger than foreign parents' countries, the outbound profit shifting is 2.25% from observed (reported) profit.

Moreover, Huizinga and Leaven (Huizinga & Laeven, 2008) found that elasticity is lower than Hines and Rice. Using Amadeus data for the year 1992 cross-sectional data, they find the elasticity of 1.31. Furthermore, Dischinger found the elasticity of 0.7 using the panel data form 1995-2005 from Amadeus (Dischinger, 2010). Heckemeyer and Overesch (Heckemeyer & Overesch, 2017) measure the consensus elasticity of all prior research that they combined. By using various data, the consensus elasticity estimation is 0.8.

Dharmapala stated that recent studies show lower elasticity due to the usage of more comprehensive and micro-level detailed data compared to prior study (Dharmapala, 2014c). Furthermore, those earlier studies did not differentiate the incentives for inbound and outbound profit shifting. Since they only focus on the elasticity of shifted profit, not elasticity of inbound or outbound profit-shifting.

Updated research comes from OECD working paper shows the different method (Johansson et al., 2017). The research distinguishes between inbound and outbound profit shifting. Johansson used the elasticity of Return of Total Assets (ROA) to tax rate difference among entities that belong to one MNE group. The tax rate difference is the difference between the tax rate in the observed country and the tax rate of the MNE group. Using pooled OLS panel data on ORBIS data form 2000-2010 for G20 and OECD countries, the research finds that 1% higher in the observed country compared to the average group, lower the ROA by 6% in the observed country.

Furthermore, in the same paper, Johansson also estimates the effectiveness of anti-avoidance regulation (Johansson et al., 2017). His approach is by

decomposing tax differences when positive or negative to differentiate between incentives for inbound and outbound profit shifting. The anti-avoidance will interact with positive tax differential. Using the classification of the anti-avoidance index from 0 to 8 (Johansson & Sorbe, 2016) in OECD and G20 countries, the research finds that the increase of anti-avoidance index by 1 (one) index reduce the outbound profit shifting by 3.8% . However, the index does not consider the enforcement of the countries. Another caveat of this research is that the anti-avoidance rule was based only on 2005. Thus the research does not consider year by year regulation change.

Another research look at the individual anti-avoidance regulation rather than on the aggregate index. Beer and Loeprick (Beer & Loeprick, 2015) researched how transfer pricing documentation requirements reduce profit-shifting. The result suggests that the introduction of transfer pricing documentation requirement reduces the MNE profit shifting by 52% (on average) two years after documentation regulation enactment.

Marques and Pinho conducted research specifically for transfer pricing strictness to European MNE, taking into account the enforcement level (Marques & Pinho, 2016). By using the data for the year 2001-2009, this research shows that the elasticity of earning before tax to transfer pricing strictness is 1.93, while the elasticity to tax difference is 1.74.

There are still few studies evaluating the effectiveness of aggregate anti-avoidance. Most studies focus on specific individual anti-avoidance. Hence, this paper fills the gap by focusing on the aggregate level. The methodology used based on Johansson's methodology (Johansson et al., 2017). Moreover, this paper brings more in-depth analysis by considering year by year change of anti-avoidance regime, rather than using one year as a base year as in Johansson's (2017).

2.1. Why ASEAN?

The study on the anti-avoidance impact in ASEAN is still rare, although these regions provide new material to be studied due to non-harmonized tax structure, tax regulation, and the variation of the tax rate (Compact, 2013). Also, different resources endowment across ASEAN countries determine the economic and taxation policy (Institute, 2014). The countries discussed in this paper and their respective corporate tax rate are as follows:

Table 1 ASEAN Statutory Corporate Income Tax

Country	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Vietnam	25%	25%	25%	25%	25%	22%	22%	20%	20%	20%
Indonesia	28%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Thailand	30%	30%	30%	23%	20%	20%	20%	20%	20%	20%
Malaysia	25%	25%	25%	25%	25%	25%	24%	24%	24%	24%
Philipines	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Cambodia	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Myanmar	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Singapore	18%	17%	17%	17%	17%	17%	17%	17%	17%	17%
Brunei	18.5%	18.5%	18.5%	18.5%	18.5%	18.5%	18.5%	18.5%	18.5%	18.5%
Laos	35%	35%	35%	28%	24%	24%	24%	24%	24%	24%

Now we have a set of different tax rates. Where some countries could become victims of outbound profit shifting, and some become the destinations of inbound profit shifting. Furthermore, we need to evaluate the anti-avoidance index. The index will be given according to the level of strictness from the year 2009 to 2018. By collecting the information from each previous studies, publications, official websites, regulations, reports from the consulting firm, the evaluation of the index are as follows:

2.2. Transfer Pricing Regulation

For the criteria of the Transfer Pricing Regulation index, Johansson set specifications based on arm's length and documentation criteria (Johansson et al., 2017). The index has given below specification:

Table 2 Transfer Pricing Classification

Specification	Score Index
Arm's Length Principle exists but not stated in domestic tax law or no transfer pricing documentation requirement.	0
Arm's Length Principle exists and stated in domestic tax law, and transfer pricing documentation requirements exist, but it is not part of the annual tax return.	1
Arm's Length Principle exists and stated in domestic tax law, and transfer pricing documentation requirements exist and required as a part of the annual tax return.	2

Myanmar, Laos, and Brunei do not have transfer pricing regulation in their tax law (Chhiv, 2019; KPMG, 2013) (Ernst & Young, 2018) (KPMG, 2018b) (Loh, 2018) (Zainuddin, 2019). While Thailand, Malaysia, Philippines, Cambodia has given a score of 1 since their transfer pricing documentation requirement is not required at the time of annual tax return submission (Peerapat, 2019) (Suteeraporncha, 2019) (KPMG, 2018c) (KPMG, 2013) (KPMG, 2016a) (KPMG, 2016b) (Chhiv, 2019). Indonesia enacted documentation requirements at the time annual tax return submission in 2016 (KPMG, 2018a). Thus, only Singapore and Vietnam that has documentation requirements at the time of annual tax return (KPMG, 2016c) (Low, 2019)

(KPMG, 2018d). The recapitulation score across ASEAN as follows:

Table 3 ASEAN' Transfer Pricing Index

	Country	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
1	Indonesia	1	1	1	1	1	1	1	2	2	2
2	Thailand	1	1	1	1	1	1	1	1	1	1
3	Malaysia	1	1	1	1	1	1	1	1	1	1
4	Singapore	2	2	2	2	2	2	2	2	2	2
5	Philippines	1	1	1	1	1	1	1	1	1	1
6	Vietnam	2	2	2	2	2	2	2	2	2	2
7	Myanmar	0	0	0	0	0	0	0	0	0	0
8	Cambodia	1	1	1	1	1	1	1	1	1	1
9	Laos	0	0	0	0	0	0	0	0	0	0
10	Brunei	0	0	0	0	0	0	0	0	0	0

2.3. Thin Capitalisation Regulation

For the criteria of Thin Capitalisation index, Johansson set the criteria for thin capitalisation as follows (Johansson & Sorbe, 2016):

Table 4 Thin Capitalisation Classification

Specification	Score Index
No thin capitalisation rule.	0
Thin capitalisation rule exists in the form of debt to equity ratio is less strict than 3:1 or interest to earnings ratio less strict than 30%.	1
Thin capitalisation rule exists in the form of debt to equity ratio is stricter than 3:1 or interest to earnings ratio stricter than 30%.	2

Most ASEAN countries do not implement thin capitalisation rules. Only Indonesia and Cambodia have implemented this regulation. Indonesia enacted a debt to equity ratio of 4:1 in 2015 (Delloite, 2018; KPMG, 2018a), while Cambodia has the limitation of interest deduction is 50% of net income (Chhiv, 2019; KPMG, 2013).

Table 5 ASEAN' Thin Capitalisation Index

	Country	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
1	Indonesia	0	0	0	0	0	0	1	1	1	1
2	Thailand	0	0	0	0	0	0	0	0	0	0
3	Malaysia	0	0	0	0	0	0	0	0	0	0
4	Singapore	0	0	0	0	0	0	0	0	0	0
5	Philippines	0	0	0	0	0	0	0	0	0	0
6	Vietnam	0	0	0	0	0	0	0	0	0	0
7	Myanmar	0	0	0	0	0	0	0	0	0	0
8	Cambodia	1	1	1	1	1	1	1	1	1	1
9	Laos	0	0	0	0	0	0	0	0	0	0
10	Brunei	0	0	0	0	0	0	0	0	0	0

2.4. Controlled Foreign Corporation (CFC) Regulation

For the criteria of Controlled Foreign Corporation index, Johansson set the criteria as follows (Johansson & Sorbe, 2016) (Markle & Robinson, 2012):

Table 6 Table 6 CFC Classification

Specification	Score Index
No Controlled Foreign Corporation regulation in the country.	0
A Controlled Foreign Corporation Regulation exists.	1

The majority of ASEAN country does not have CFC rule in their domestic regulation. It is Only Indonesia that has CFC rule implemented (KPMG, 2018a). The recapitulation is as follows:

Table 7 ASEAN' CFC Index

	Country	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
1	Indonesia	1	1	1	1	1	1	1	1	1	1
2	Thailand	0	0	0	0	0	0	0	0	0	0
3	Malaysia	0	0	0	0	0	0	0	0	0	0
4	Singapore	0	0	0	0	0	0	0	0	0	0
5	Philippines	0	0	0	0	0	0	0	0	0	0
6	Vietnam	0	0	0	0	0	0	0	0	0	0
7	Myanmar	0	0	0	0	0	0	0	0	0	0
8	Cambodia	0	0	0	0	0	0	0	0	0	0
9	Laos	0	0	0	0	0	0	0	0	0	0
10	Brunei	0	0	0	0	0	0	0	0	0	0

2.5. General Anti Avoidance Regulation (GAAR)

GAAR's feature in every country is different, so it is hard to quantify the index. Thus, Johansson set the specification for GAAR index based on the existence of rule as follows:

Table 8 GAAR Classification

Specification	Score Index
No General Anti Avoidance Regulation in the country.	0
A General Anti Avoidance Regulation exists.	1

There are only Malaysia and Singapore which have GAAR implemented in domestic regulation. Malaysia Applied GAAR since 1967, where Singapore Apply GAAR in 1988 (KPMG, 2013).

Table 9 ASEAN' GAAR Index

	Country	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
1	Indonesia	0	0	0	0	0	0	0	0	0	0
2	Thailand	0	0	0	0	0	0	0	0	0	0
3	Malaysia	1	1	1	1	1	1	1	1	1	1
4	Singapore	1	1	1	1	1	1	1	1	1	1
5	Philippines	0	0	0	0	0	0	0	0	0	0
6	Vietnam	0	0	0	0	0	0	0	0	0	0
7	Myanmar	0	0	0	0	0	0	0	0	0	0
8	Cambodia	0	0	0	0	0	0	0	0	0	0
9	Laos	0	0	0	0	0	0	0	0	0	0
10	Brunei	0	0	0	0	0	0	0	0	0	0

2.6. Tax Treaty Network and Withholding Tax Rate

The criterion based on the number of tax treaties and the withholding tax rate on dividend, interest, and royalty to the non-resident. Johansson set the criteria as follows (Johansson & Sorbe, 2016):

Table 10 Tax Treaty Network and Withholding Tax Rate

Specification	Score Index
The average tax rate of Dividend, interest, royalty is below or equal to 20%, or the number of tax treaty network is above 52 treaties.	0
The average tax rate of Dividend, interest, royalty is above 20%, and the number of tax treaty network is above 52 treaties.	1
The average tax rate of Dividend, interest, royalty is above 20%, and the number of tax treaty network is below 52 treaties.	2

For this criterion, the tax treaties network will be in the current 2018 condition. The score of withholding tax rate and tax treaty network for ASEAN countries as follows:

Table 11 ASEAN' Tax Treaties and WHT Rate Index

No	Country	Dividend	Interest	Royalty	Average	Tax Treaty	Score
1	Indonesia	20%	20%	20%	20%	66	1
2	Thailand	10%	15%	15%	13%	61	1
3	Malaysia	0%	15%	10%	8%	74	0
4	Singapore	0%	15%	10%	8%	80	0
5	Philippines	30%	30%	30%	30%	41	2
6	Vietnam	0%	5%	10%	5%	77	0
7	Myanmar	0%	15%	15%	10%	8	0
8	Cambodia	14%	14%	14%	14%	2	0
9	Laos	10%	10%	5%	8%	8	0
10	Brunei	0%	0%	0%	0%	13	0

2.7. Overall Classification

The overall classification derived by summing up all the above indexes. The range of index will be 0-8; the results are as follows:

Table 12 Overall ASEAN Index

	Country	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
1	Indonesia	3	3	3	3	3	3	4	5	5	5
2	Thailand	2	2	2	2	2	2	2	2	2	2
3	Malaysia	2	2	2	2	2	2	2	2	2	2
4	Singapore	3	3	3	3	3	3	3	3	3	3
5	Philippines	3	3	3	3	3	3	3	3	3	3
6	Vietnam	2	2	2	2	2	2	2	2	2	2
7	Myanmar	0	0	0	0	0	0	0	0	0	0
8	Cambodia	2	2	2	2	2	2	2	2	2	2
9	Laos	0	0	0	0	0	0	0	0	0	0
10	Brunei	0	0	0	0	0	0	0	0	0	0

A strict anti-avoidance rule corresponds to the index between 7 – 8, while relatively strong is 5 – 6. Range from 3 – 4 considered moderate, while 0 – 2 is considered weak (Johansson & Sorbe, 2016).

3. METHODOLOGY

3.1. Theoretical Methodology

In order to analyze the elasticity of profit-shifting, we start by understanding how profit-shifting works in an MNE. This paper uses a conceptual framework used by Hines and Rice (Hines & Rice, 1994), Huizinga and Laeven (Huizinga & Laeven, 2008), and Fuest et al. (Fuest, Riedel, & Riedel, 2011). The framework specified that international tax differences among countries generate incentives and opportunities for MNE to conduct profit-shifting (Huizinga & Laeven, 2008).

Assume that MNE operated in country *k* and country *i* where *k* is any country outside *i.* Country *i* is ASEAN country, which could be a high tax rate or low tax rate compared to Country *k.* However, the interaction between *k* and *i* could vary among the member of ASEAN country. For example, *i* is Indonesia, and *k* is Singapore, meaning we asses an affiliated MNE located in Indonesia (*i*) which has affiliation in a company in Singapore (*k*). The statutory CIT rate in country *k* is denoted by t_k, while t_i denotes the statutory CIT rate in the country *i.*

In order to understand how MNE maximize their profit through shifting strategy, this paper thinks from two different perspectives, which are the global MNE group perspective and individual MNE perspective.

First, we think from the global MNE perspective (Fuest et al., 2011). The MNE earn a total profit (π_{mne}) from country *i* and country *k*. π_k denotes profit in country *k*, where π_i denotes profit in the country *i*. The total profit of the MNE is $\pi_{mne} = \pi_k + \pi_i$.

Thus, the total MNE group globally received the total profit after tax ($(1-t)\ \pi_{mne}$) which denotes by:

$$(1\text{-}t)\,\pi_{mne} = (1\text{-}\,t_k)\,\pi_k + (1\text{-}\,t_i) \qquad (1)$$

After the profit shifting strategy applied, the profit after tax ($(1\text{-}t)\,\pi_{mneas}$) for MNE group become:

$$(1\text{-}t)\,\pi_{mneas} = (1\text{-}\,t_r)\,(\pi_r + s\,) + (1\text{-}\,t_i)\,(\pi_i - s) \qquad (2)$$

We assume that to conduct the profit shifting strategy, there is a cost to be borne. Consequently the MNE profit after tax after considering the cost of profit $c(S_i)$ shifting as follows:

$$(1\text{-}t)\,\pi_{mneas} = (1\text{-}\,t_k)\,(\pi_k + S) + (1\text{-}\,t_i)\,(\pi_i - s) - c(S) \qquad (3)$$

By differentiating (3) with respect to profit shifting strategy (S) we have:

$$\frac{\partial \pi mneatps}{\partial S} = (t_i - t_k) = c'(s) \qquad (4)$$

Equation (4) shows that the marginal benefit of profit shifting strategy should equal to the marginal cost of profit shifting strategy.

We assume that there is a tax rate difference between t_k and t_i, where $t_k < t_i$. Since we want to focus on outbound profit shifting the ASEAN country, we focus on the perspective of country *i*. The tax rate difference depicts the incentive for MNE to conduct profit shifting from *i* perspective (S_i). This incentive leads to inbound and outbound profit shifting that follows:

$$S_i \begin{Bmatrix} S_i > 0\ if\ t_k < t_i \\ S_i = 0\ if\ \ t_i = t_k \\ S_i < 0\ if\ t_k > t_i \end{Bmatrix} \qquad (5)$$

Note that the first line is outbound profit shifting is positive from the perspective of *I* ,if the tax rate in *i* is higher than tax rate in *k*. The second line depicts no profit shifting made if the tax rates are the same. The last line stated that inbound profit shifting would come to *i* if the tax rate in *i* is relatively lower than *k*.

Now, we think from the perspective of the individual MNE. Consider a member of MNE in a country sample i. Assume Ri is the real profit generated in the country i from the firm's capital and labor. Si is outbound profit shifting out from country i. Following the work of Hines and Rice (Hines & Rice, 1994) and Huizinga and Laeven (Huizinga & Laeven, 2008) marginal cost of profit shifting is the ratio of shifted profit to real profit (Si / Ri) multiplied by α. α is the strength of anti-avoidance regulation in a country i which also determines the proportion of shifted profit. Hence, Huizinga and Laeven (Huizinga & Laeven, 2008) state that profit shifting cost is $c(s) = \frac{\alpha}{2}\frac{(S_i)^2}{R_i}$.

The logic behind this equation is that the shifting cost will be higher if a higher proportion of the profit is shifted out of the country i. If Si 100% of Ri, (Si = Ri), all profit is shifted out of the country i, Then the shifting cost in the form of compliance cost, sanction, penalties, reputation would be Si times the anti-avoidance strength α/2 . The stronger the anti-avoidance is, the higher the cost. The anti-avoidance rule brings back the out-shifted profit, and also imposes penalties and sanctions and so on. In the end, if the rule is applied to the MNE, the MNE should bring back the Si ¬to country i, but also have to pay the sanctions (Huizinga & Laeven, 2006) (Hines & Rice, 1994). The total amount may be much higher than the tax that would be owed on the initial amount of profit shifting. However, in a real situation, the issues for tax revenues are not that the amount of shifted profit but the tax that not being paid because of profit-shifting.

Again, the Individual firm in the country i maximize after-tax profit by considering outbound profit shifting strategy (S_i) which is:

$$\max_{S_i}(1 - t_i)\pi_i = (1 - t_i)\,(R_i + \Big(S_i(t_i - t_k) - \frac{\alpha}{2}\frac{(S_i)^2}{R_i}\Big)) \qquad (6)$$

Note that the amount of shifted profit depends on the incentives, and the profit-shifting cost is tax-deductible since when being audited, the principal tax paid is creditable (but not the penalty). Thus, the first-order condition with respect to profit shifting strategy (S_i) will be:

$$\frac{\partial(1-t_i)\pi_i}{\partial S_i} = \Big((t_i - t_k) - \alpha\frac{S_i}{R_i}\Big) = 0 \qquad (7)$$

Solving the equation (7) we have $\alpha\frac{S_i}{R_i} = (t_i - t_k)$. We find the same result as equation (4) where the marginal cost of profit shifting equal to the differential tax rate.

$$S_i = \frac{R_i}{\alpha}(t_i - t_k\,) \qquad (8)$$

The equation above depicts the marginal after-tax profit shifting in *i*. While Hines and Rice (Hines & Rice, 1994) focus only the differential tax rate between parent and observed entity, Huizinga and Laeven (Huizinga & Laeven, 2008) argues that the profit shifting strategy considers all member of the MNE around the countries *k*, taking into account different tax rate in specific countries. Hence, solving equation (8) for global profit shifting we have:

$$S_i = \Big(\frac{R_i}{\alpha}\Big)\frac{\sum_{k\neq i}^{n}(t_i - t_k\,)}{n} \qquad (9)$$

Where $\frac{\sum_{k\neq i}^{n}(t_i - t_k)}{n}$ is the unweighted average difference of tax rate between the observed entity of the MNE. Thus, the reported profit is the accounting profit (R_i^r) or the difference between real profit (R_i) from economic activity and shifted profit (S_i), $R_i^r = R_i - S_i$. The expression becomes:

$$R_i^r = R_i \left[1 - \left(\frac{1}{\alpha}\right)\frac{\sum_{k\neq i}^{n}(t_i - t_k)}{n}\right] \quad (10)$$

We would like to know the effectiveness of anti-avoidance regulation as the cost of profit shifting. In the above equation, this strength depicted by α. While the incentives of profit shifting depicted by average different of the tax rate $(t_i - t_k)$. Hence, the hypothesis would be:

$$R_i^r \begin{cases} R_i^r < R_i \; if \; \frac{\sum_{k\neq i}^{n}(t_i - t_k)}{n} > 0, since \; S_i > 0 \\ R_i^r = R_i \; if \; \frac{\sum_{k\neq i}^{n}(t_i - t_k)}{n} = 0, since \; S_i = 0 \\ R_i^r > R_i \; if \; \frac{\sum_{k\neq i}^{n}(t_i - t_k)}{n} < 0, since \; S_i < 0 \end{cases} \quad (11)$$

By decomposing the incentives $(t_i - t_k)$, Equation (10) states that reported profit will be larger (smaller) than real profit if differential tax is positive (negative). Another important concept to consider is that anti-avoidance regulation (α) only be applicable for tackling outbound profit shifting. Anti-avoidance has no effect on inbound profit shifting.

3.2. Empirical Methodology

This paper uses an empirical strategy by Hines and Rice (1994) which modified by Johansson (2017) to test (or apply) the theory above for the ASEAN region. In order to estimate (10) we assume the Cobb-Douglass Production function where $Q = A^{\beta 1}K^{\beta 2}L^{\beta 3}$. The individual firm real profit is the return on capital which is $R_i = Q - wL = (1 - \beta_3)A^{\beta 1}K^{\beta 2}L^{\beta 3}$, where *A* is the productivity of labour, *K* is capital input, and *L* is labour input. Taking the log of both sides we have real profit equation without shifting strategy which is:

$$log\, R_i = log(1 - \beta_3) + \beta_1\, log\, A + \beta_2\, log\, K + \beta_3\, log\, L \quad (12)$$

Then, by substituting (12) into (10) and considering profit shifting strategy (11) and differences tax rate incentives, $atediff = \frac{\sum_{k\neq i}^{n}(t_i - t_k)}{n}$, we have the equation of reported profit of an individual firm in their financial report:

$$log\, R_i^r = log(1 - \beta_3) + \beta_1\, log\, A + \beta_2\, log\, K + \beta_3\, log\, L + \beta_4\, taxratediff \quad (13)$$

That estimation follows the same model as used in previous research (Salvador & A'andria, 2018) (Ratan, 2015). Furthermore, to estimates the effectiveness of anti-avoidance regulation, Johansson et al. Modify the above model (Johansson et al., 2017) to embed the strength of the anti-avoidance regulation index (*AAR*), which we have calculated earlier for ASEAN. By decomposing the incentives $taxdiff$ when it is positive and negative, as firm will react differently according to equation (5) and equation (11). The modified model is as follows:

$$log\, R_{it}^r = \beta_0 + \beta_1\, log\, A_{it} + \beta_2\, log\, K_{it} + \beta_3\, log\, L_{it} + \beta_4\, positive.taxratediff_{it} + \beta_5\, negative.taxratediff_{it} + \beta_6\, AAR_{it} + \beta_7\, AAR_{it}\, positive.taxratediff_{it} + \beta_8\, Country_i + \beta_9\, X_{it} + \epsilon_{it} \quad (14)$$

Table 13 List of Variables

Variables		Explanation
$Log\, R_i^r$	=	The logarithm of Reported Profit before tax, as stated in Financial Report of the individual entity in the country *i.*
β_0	=	Equal to $log(1 - \beta_3)$, A constant.
$\beta_1\, log\, A$	=	The logarithm of productivity of the individual entity in the country *i*. Proxied by per capita GDP (Hines & Rice, 1994).
$\beta_2\, log\, K$	=	The logarithm of the capital of individual entity. Proxied by total assets.
$\beta_3\, log\, L$	=	The logarithm of labor of individual entity, proxied by cost of employee.
$\beta_4\, positive.\, taxratediff$		The positive result of average difference between corporate Income Tax Rate of a country *i* and country *k*. or $\frac{\sum_{k\neq i}^{n}(t_i - t_k)}{n} > 0$, this variable serves as an incentive for Outbound Profit Shifting. If the result is negative, the value will be zero.
$\beta_5\, negative.\, taxratediff$	=	The negative result of average difference between corporate Income Tax Rate of a country *i* and country *k*. $\frac{\sum_{k\neq i}^{n}(t_i - t_k)}{n} < 0$, this variable serves as an incentive for Inbound Profit Shifting. If the

Variables		Explanation
		result is positive, the value will be zero.
$\beta_6\ AAR$	=	The strength of anti-avoidance Regulation in Country *i*, taking into consideration the changing over time.
$\beta_7\ AAR\ x\ positive.\ taxratediff$	=	An interaction variable between the strength of anti-avoidance and incentives for outbound profit shifting. A variable of Interest that describes the effectiveness of anti-avoidance.
$\beta_8\ Country$	=	A Country Dummy. Cambodia as a base dummy.
$\beta_9\ X$	=	The set of control variables, which consists of macroeconomic variables such as; Regulatory Index, exchange rate, inflation, GDP growth rate.
$\varepsilon_{f,g,s,i,t}$	=	Residual Term.

The estimation uses panel data estimation following the method used in prior research (Fuest et al., 2011; Huizinga & Laeven, 2006; Johansson et al., 2017; Purba, 2018; Ratan, 2015). The elasticity of outbound profit shifting is depicted in β_4, while the effectiveness of anti-avoidance regulation will be represented in β_7. β_7 is expected to have a positive sign if strong anti-avoidance regulation can reduce profit shifting. The overall effect of anti-avoidance regulation is the summation of$(\beta_4 + \beta_7)$.

4. DATA

The company micro-level data is sourced from ORBIS for the year 2009-2018, which provided by Bureau Van Dijk. ORBIS provides reported financial reports of the company, and the structure of their MNE group around the world. The coverage year 2009-2018 is chosen to include the Base Erosion and Profit Shifting (BEPS) initiatives in 2015. In this coverage year, many countries have redesigned their anti-avoidance regulation. The rest of the data will is sourced from several sources, for example, OECD data, UN data, UNCTAD, and several official reports from consulting firms. The regulatory index as a control for enforcement is sourced from the World Bank Regulatory index.

ORBIS is chosen because it provides reported financial reports of individual companies. However, several processes of cleaning need to be done on the data before conducting the regression process. The step of the cleaning process is as follows:

Table 14 Cleaning Process

No.	Step	Number of Observations	% of Step 1	Reason
1	Initial Population of ORBIS	307,563,635	100%	-
2	Excluding Independence firms	211,858,469	68%	Since cross border profit shifting only happen in affiliated firms. Criteria of 25% Ownership (directly or indirectly) is used to determine an affiliated company.
3	Excluding non-ASEAN firms.	2,915,067	0.948%	-
4	Excluding firms with a consolidated financial report	112,347	0.037%	The financial report should be on individual firm report.
5	Excluding year outside 2009-2018	99,646	0.032%	-
6	Excluding firm with incomplete financial information	85,136	0.028%	-
7	Manual Cleansing which consists of:	18,529	0.006%	The cleansing process following the step conducted by Johansson (2017).

No.	Step	Number of Observations	% of Step 1	Reason
	a. Excluding 2.5% of top and bottom ratio. b. Excluding loss-making firms. c. Exclude domestic only MNE firms. d. Excluding firms with negative tax payment.			
8	Final Sample	18,529	0.006%	The Number of Entitiy

In the final result, we have population of 18,529 ASEAN MNE entities to be analyzed using equation 14. The covered period is 2009 to 2018.

5. RESULT

The estimation result of equation 14 to the population sample are as follows:

Table 15 Estimation Result

	Estimation of the effectiveness of anti-avoidance (equation 14)	**Estimation of the effectiveness of anti-avoidance with an index level**
Dependent Variable	**Log of reported profit**	**Log of reported profit**
Constant	2.776***	2.634***
	(0.129)	(0.092)
Log of GDP per capita	0.019**	0.02
	(0.009)	(0.009)
Log of total asset	0.578***	0.578***
	(0.003)	(0.003)
Log of employee cost	0.341***	0.341***
	(0.0051)	(0.0051)
Positive tax rate different	**-1.822***	**-1.657***
	(0.637)	**(0.654)**
Negative tax rate different	1.368***	1.373***
	(0.124)	(0.124)
Anti-avoidance regulation Index	-0.019***	-.0.019***
	(0.003)	(0.003)
Anti-avoidance regulation index times positive tax rate different	**0.551***	**0.497**
	(0.214)	**(0.219)**
Index of 2		0.134***
		(0.016)
Index of 3		0.386**
		(0.015)
Index of 4		0.367*
		(0.018)
Index of 5		0.238*
		(0.181)
Regulatory Index	-0.064	-0.065
	(0.041)	(0.019)
GDP growth rate	0.002	0.002
	(0.002)	(0.003)
Inflation rate	-0.004	-0.003
	(0.0020)	(0.0020)
Exchange rate	-0.0001***	-0.0001
	(9.02e-07)	(9.02e-07)
Indonesia	-0.18	-0.44**
	(0.15)	(0.17)
Laos	-0.12	-0.16
	(0.17)	(0.11)
Malaysia	0.11	0.11**
	(0.13)	(0.051)
Philippines	0.05	-0.18
	(0.12)	(0.15)
Singapore	0.24	Ommited
	(0.16)	
Thailand	0.17	0.18**
	(0.16)	(0.04)
Vietnam	-0.26	-029
	(0.12)	(0.24)
Observations	54,599	54,599
R-Squared	0.8243	0.8284
Adjusted	0.7950	0.7950

The fixed-Effect used as an estimation Method. *** indicates significance at 1%. ** indicates significance at 5%. * indicates significance at 10%. All coefficient estimated in robust standard error, I have conducted F-test, Hausman Test, Breusch-Pagan LM test, and concluded the fixed-effect method is the most appropriate method.

6. CONCLUSION AND CAVEATS

From the table above, we can conclude that a 1% positive tax rate difference from ASEAN country to average other MNE group leads to the outbound profit shifting out from ASEAN country by 1.822% MNE firm's profit on average. In addition to that, a 1% negative tax rate difference will bring 1.368% inbound profit shifting into ASEAN on average.

This outbound profit shifting estimation is higher than in previous research (0.8%) (Heckemeyer & Overesch, 2017). However, it is almost similar to Hines and Rice (Hines & Rice, 1994), and Grubert and Mutti (Hines & Rice, 1994). One of the reasons is that the majority of ASEAN countries are developing country which is more prone to outbound profit shifting (Fuest et al., 2011).

In order to calculate the effectiveness of anti-avoidance, we summarize the equation as follows:

$$log\ R_{it}^{r} = 2.776 + 0.019\ log\ A_{it} + 0.578\, log\ K_{it} + 0.341\ log\ L_{it} - 1.822\ positive.taxratediff_{it} + 1.368\ negative.taxratediff_{it} - 0.019\ AAR_{it} + 0.551\ AAR_{it}\ x\ positive.taxratediff_{it} - 0.064\ regulatoryindex - 0.004\ inflation\ rate - 0.00001\ exchangerate + \ldots. \quad (15)$$

Using the above results, we can estimate the effect of the profit with respect to the positive tax rate different:

$$\frac{\partial \log R^{r}}{\partial positive.taxratediff} = -1.822 + 0.551\ AAR \quad (16)$$

From equation (16), the net impact of strength anti-avoidance is 1.271% (-1.822 +0.551) on average. The result means that ASEAN countries still suffer from outbound profit shifting by 1.271% from every 1% positive difference and 1 (one) index of anti-avoidance.

From each index level, The most significant impact is achieved when the index elevates from 2 to 3, which is 0.388%. After that, the impact shows a decreasing result.

Another question is to answer is how much the theoretical average level of the anti-avoidance index is effective in reducing profit shifting to zero on average. From equation (16) and set that to 0, we can derive the level of anti-avoidance by:

$$-1.822 + 0.551\ AAR = 0$$

$$AAR = \frac{1.822}{0.551} = 3.3 \quad (17)$$

It is quite a surprising result that the effective level of the index is 3.3, which is considered a moderately-strong level (Johansson & Sorbe, 2016). Hence theoretically, the level of moderately-strong anti-avoidance is effective in reducing outbound profit shifting to zero on average.

From the estimation results, a moderately strong (between 3 and 4) anti-avoidance index is sufficiently effective. Moreover, too strict anti-avoidance will have a decreasing effect. The highest level of index belongs to Indonesia (index of 5), while the majority of ASEAN is between 2 and 3.

However, having the highest level of the index does not mean that Indonesia has benefited from it. The result shows that Indonesia is one of the countries besides Vietnam, which severely impacted by outbound profit-shifting Vietnam's level of anti-avoidance is relatively weak compared to the effective level, while Indonesia's level of anti-avoidance is too high compared to the effective level.

Besides, some countries do not affect by outbound profit-shifting while maintaining a relatively low level of anti-avoidance. Singapore and Thailand are the countries with relatively below the level of anti-avoidance, but they are not negatively impacted or having a lower impact compared to other countries.

We can conclude that in designing the anti-avoidance in ASEAN, the strength of anti-avoidance should not be too strict. Otherwise, the effect would be ineffective.

From the policy point of view, We can conclude that in designing the anti-avoidance in ASEAN, the strength of anti-avoidance should not be too strict, not too low. Otherwise, the effect would be ineffective. A level of moderately strong is enough to generate an effective level. Thus, the tax authority needs to focus on anti-avoidance, which targets specific transactions that are most often conducted by the MNE.

One of the caveats of this paper lies in the availability of the data. ORBIS is considered the best firm-level data provider now but still does not represent the whole population of the whole MNE. The level of availability of a firm-level in each country is different. It is also found that the sample does not represent all ASEAN countries since not all ASEAN

countries available in ORBIS (No data for Timor-Leste, and very little data of Myanmar and Cambodia).

Another caveat is that the group structure data in ORBIS stated only in the recent data. ORBIS does not provide historical data; for example, there is no data of the time indicating the MNE group acquire another member, or whether there was group restructuring within the covered years. This could result in bias in calculating tax rates difference.

Moreover, the usage of statutory corporate income tax rate different has a potential bias, since the MNE put more consideration in the effective tax rate. Low effective tax rate combined by other tax benefits such as tax sparring, tax incentives, has a stronger impact than the mere differential statutory tax rate. But the effective tax rate is unobservable since only companies and the tax authority that has information.

In addition, the endogeneity of tax policy is also an important thing to consider. It is a high possibility that companies choose the location of the affiliated party by considering the tax policy (tax haven hypothesis). As we have discussed, tax competition to attract FDI allows the MNE to choose their location based on the attractiveness given by specific countries such as tax holiday, tax allowance, and other types of tax incentives.

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