

CROSS-BORDER PROFIT SHIFTING: EVIDENCE FROM INDONESIA

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Abstract: Prior studies suggest that profit shifting by multinational enterprises (MNEs) happens not only in developed countries but also in developing ones. However, the knowledge of profit shifting in developing countries is very limited, because the findings of most of the existing studies are difficult to interpret mainly due to problems of reliability of data and method used to measure profit shifting (Fuest & Riedel, 2012).

This paper examines whether foreign-owned Indonesian companies (FOICs) shift profits out of the country by following an approach introduced by Hines and Rice (1994) (hereafter HRA) with some modifications. HRA has been widely cited in the literature of international tax avoidance. We utilise both accounting profit and taxable income reported by FOICs in their Indonesia confidential tax return data supplied by the Indonesian tax authority.

After analysing a final sample of more than three thousand firm-year observations from 2009 to 2015, we find that a one percentage point reduction in parent's tax rate decreases reported profits (taxable income) in Indonesia by 2.5 percent (2.9 percent). Another crucial finding is that there has been inconsistent behaviour of the MNEs to shift profits from Indonesia during the years covered by the study period. We suspect that this is likely to be associated with the fact that Indonesia joined the global BEPS project to tackle profit shifting in 2013 but has not taken any substantive actions to reduce profit shifting ever since.

Keywords: Profit shifting; Indonesia; tax return data; Hines and Rice approach

1. Introduction

Business enterprises view tax as an expense and may try to avoid it. Multinational enterprises (MNEs) are in a better position to avoid tax because different countries have different tax rates and tax rules that MNEs can exploit. The most widely known way of avoiding tax internationally is by shifting profits to low tax jurisdictions.

Despite profit shifting strategies in most cases are not illegal, according to the Organisation for Economic Co-operation and Development (OECD, 2014a), it generates several undesirable consequences as follows. First, profit shifting distorts competition. MNEs may gain competitive advantages from profit shifting opportunities that domestic companies do not have. Second, it may cause inefficient allocation of resources by distorting investment decisions towards activities that have lower pre-tax rates of return, but higher after-tax returns. Finally, it discourages voluntary compliance of the majority of taxpayers since they witness that MNEs legally avoid income tax. The three potential distortions, compounded by the fact that most of developing countries rely greatly on corporate income tax revenue have positioned studies on profit shifting by MNEs, especially those that focus on developing countries, as significantly important.

The incidence of profit shifting by MNEs in developed countries has been confirmed by plenty of empirical studies for decades. On the other hand, similar studies that focus on developing countries has only emerged in the last couple of years. Fuest and Riedel (2012) argue that the reason why knowledge on profit shifting in developing countries is very little is because the data and method used to measure profit shifting are less reliable.

This paper uses not only accounting profit but also taxable income reported by foreign-owned Indonesian companies (FOICs) in their confidential Indonesia tax returns to examine whether these Indonesian affiliates or subsidiaries of foreign MNEs shift profits out of

Indonesia, a major developing economy. This paper is one of the early papers that uses tax return data to examine the existence of profit shifting by MNEs in a developing country.

Both the accounting profit and the taxable income are analysed using an approach introduced by Hines and Rice (1994 hereafter HRA) with some modification. Hines and Rice (1994) is one of a few pioneer studies on profit shifting by multinational companies that “established a conceptual framework that continues to be highly influential” (Dharmapala, 2014b, p. 424).¹ Dowd, Landefeld, and Moore (2017) even indicate that HRA has become a standard in the literature.

Despite the fact that the results in studies that adopt HRA vary, they are consistent with the hypothesis that there is a negative relation between the level of corporate income tax rates and the magnitude of profits reported by MNEs in different countries. However, as far as we are aware, no prior study adopts HRA to measure the extent to which the tax rate of the parent’s country of a foreign-owned company operating in a developing country influences the profits reported by the foreign-owned company.

In this study, we define “parent’s country” as the country where the immediate parent of a FOIC is located, not the country where the ultimate parent is located. We also define “parent’s tax rate” as the statutory tax rate of the country in which the immediate parent is located. For illustration purposes, let us take Google as an example. PT Google Indonesia is a FOIC. It’s a subsidiary of Google Asia Pacific Pte Ltd., located in Singapore. Google Asia Pacific is ultimately owned by Alphabet Inc. in the US. Here, Google Asia Pacific Pte Ltd. is the immediate parent. Therefore, in this paper we use Singaporean tax rate, not US tax rate, to examine whether PT Google Indonesia shift profits out of Indonesia.

Using HRA, our regression results indicate that FOICs with parents located in lower tax jurisdictions tend to report lower profits in Indonesia, suggesting the existence of profit shifting

¹ Grubert and Mutti (1991) is another prominent early study that also is widely cited.

by FOICs. The empirical evidence provided by this paper is expected to complete the picture of cross-border profit shifting by MNEs in both developed and developing countries.

The rest of this paper is organised as follows. The next session discusses the background of the study and develops the hypothesis. Section 3 describes the research design. Section 4 reports the empirical results. Section 5 offers concluding remarks.

2. Theoretical background and hypothesis development

2.1. Hines and Rice approach in detecting cross-border profit shifting

According to basic tax competition model, governments commit to a tax system and capital owners choose where to invest their capital (Wilson, 1999). However, once location decisions are made, firms or capital become partially immobile. Some of the firms may leave a region after the initial tax break has expired and choose to seek tax breaks in other regions (Wilson, 1999). From an international tax avoidance perspective, moving to other regions may not be necessary if MNEs have opportunities to reallocate taxable income from countries with high tax rates to countries with low tax rates (Hines Jr, 1999). This international tax avoidance strategy is known as profit shifting.

In their seminal paper, Hines and Rice (1994) construct HRA, an economic approach to investigate the effect of tax rate variation on profits reported by MNEs. As Dharmapala (2014b) explains, the basic premise of HRA is that pre-tax income consists of two elements: (1) “true” income, i.e. income produced from utilising capital and labour inputs; and (2) “shifted” income, i.e. the income shifted across borders due to tax incentive in the form of tax rate difference between the parent and the affiliate. Equation (1) represents the original HRA.

$$\log \pi_i = \beta_0 + \beta_1 \tau_i + \beta_2 \log K_i + \beta_3 \log L_i + \beta_4 \log A + \varepsilon_i \quad (1)$$

where:

π_i is the reported pre-tax nonfinancial income of affiliate i , the dependent variable. Hines and Rice (1994) define pre-tax nonfinancial income as total pre-tax net income plus interest payments minus interest receipts;

τ_i is the average tax rate in a local country where affiliate i operates. HRA bases the average tax rate on lower of the effective tax rate and the statutory tax rate. The effective tax rate is corporate income tax paid by all US affiliates in the local country divided by their total net income before tax (the independent variable);

K_i is capital input of affiliate i ;

L_i is labour input of affiliate i ;

A is the level of productivity in the local country (proxied by income per capita in the country where affiliate is located);

ε_i is the error term.

Using country-level aggregate of US owned MNE affiliates operating in 59 countries in 1982, Hines and Rice (1994) use equation (1) to estimate the effect of tax rate variation in those host countries on the profits reported by the MNEs in those countries. In calculating K_i , HRA include only real/economic capital and exclude financial capital. As for π_i , HRA remove financial earnings (i.e. interest received and interest paid) from reported profits because available financial data are not as reliable as or as comprehensive as the data used to estimate K_i (Hines & Rice, 1994, p. 161). Hines and Rice (1994) find a negative effect of tax rates of host countries on measures of the profitability of US MNEs affiliates. The effect is considerably large, i.e. one percentage point higher tax rate in a host country is associated with 2.83 percent reduction in before-tax profitability reported in that host country.

HRA has been widely adopted by numerous subsequent studies that focus on examining the existence of profit shifting activities by MNEs. Despite the results show some deviations from the original study, the subsequent studies prove that HRA is a rigorous method to

investigate how tax rate disparities can influence MNEs behaviour in reporting profits. Three studies that adopt HRA are reviewed below.

Swenson (2001) studies how import tariff variation across products provides other countries' MNEs operating in US with incentives to shift profits by means of transfer pricing (i.e. by deliberately underpricing or overpricing affiliated firm transactions) over the period of 1981 to 1988. The source countries are Canada, France, Germany, Japan and the UK. She adopts some existing approach, one of which is HRA, to build a model of transfer pricing incentives with some modifications.² While she finds significant evidence that the tariff variation creates incentives for underpricing or overpricing affiliated firm transactions, she concludes that the manipulation of product transfer prices is not the main channel to shift profits.

Using micro-level data on the operations of Europe-based MNEs in many European countries, Huizinga and Laeven (2008) follow HRA when they investigate the opportunities and incentives created by cross-border profit shifting. They find that the effect of one percentage point of tax rate variation on pre-tax profit is 1.08 percent, much lower than the 2.83 percentage point obtained by Hines and Rice (1994). They argue that the much higher percentage found by Hines and Rice (1994) is due to the fact that they include tax haven countries outside Europe that presumably do not have effective cross-border profit shifting regulations.

A recent study by Dowd, et al. (2017) also adopts HRA and points out that the semi-log specification introduced by Hines and Rice (1994) has become a standard in the literature. Using panel data set of US tax returns, they scrutinize profit shifting behaviour of US MNEs

² While Hines and Rice (1994) assumes that profit shifting can occur between affiliates or between an affiliate and the parent within a cross-border network, Swenson (2001) assumes that profit shifting by means of manipulation of product transfer prices can only happen between two countries for which intra-trade flows exist.

over the period 2002-2012 and find the importance of considering a nonlinear relationship between tax rate and reported profits.

2.2. Profit shifting in developing countries

The issue of profit shifting by MNEs has been extensively studied in developed countries for decades. Yet, it has only recently grasped the attention of policy makers in developing countries (Janský & Kokeš, 2015). For example, in a report, OECD (2013b) argues that MNEs are being accused of avoiding taxes worldwide, particularly in developing countries, where tax revenue is critical to promote sustainable development. In line with the report, Dharmapala (2014a) claims that developed countries do not count much on corporate tax revenues and thus do not see profit shifting activity by MNEs as a major determining factor to their overall level of tax revenue. On the other hand, developing countries rely on corporate tax revenue as it contributes a significant fraction of their total tax revenue, and may find difficulties to switch to other forms of taxation. As a result, “developing countries are especially vulnerable to profit shifting activity” (Dharmapala, 2014a, p. 10). This statement is consistent with the view of OECD (2014b) that some of the lowest income countries even rely on income tax from foreign companies.

Indonesia is not an exception. From economic surveys on Indonesia, OECD (2012, 2015b) finds that the nation relies heavily on corporate taxes, particularly from the natural resource sector. Another international institution that reports that developing countries rely on corporate tax revenue is the IMF. In a policy paper (IMF, 2014), it estimates that the global annual corporate tax revenue loss due to profit shifting is approximately 5 per cent of the total corporate income tax revenue. But, in the report the IMF estimates that the loss spikes as high as 13 per cent in developing countries, confirming the high vulnerability of developing countries to profit shifting.

In 2012, the Group of Twenty (G20) initiated an international project to tackle profit shifting by MNEs and asked the OECD to lead the project. In February 2013, the OECD officially launched the project entitled Base Erosion and Profit Shifting, better known as the OECD/G20 BEPS Project. Indonesia became an associate that have equal footing with OECD members on the project and agreed to adopts the OECD BEPS Action Plan to address profit shifting in September 2013 (OECD, 2013a). OECD keeps encouraging developing countries to involve in the project. For example, in its “Economics Surveys: Indonesia 2015” report, the OECD (2015b, p. 15) recommends Indonesia to “continue to be actively engaged in BEPS Project” because the OECD believes that the project is an efficient tool to “facilitate and improve corporate taxation for multinationals which should benefit Indonesia’s tax collection” (OECD, 2016, p. 100).

2.3. Empirical evidence of profit shifting in developing countries and hypothesis

Empirical evidence from developing countries on the extent to which multinational tax evasion and tax avoidance cause tax revenue losses is limited (Fuest & Riedel, 2009) or even almost non-existing (Crivelli, De Mooij, & Keen, 2015), in contrast to the considerable empirical evidence from developed countries. The limited empirical evidence of profit shifting strategies utilised by MNEs in developing countries is extensively discussed by Fuest and Riedel (2012). They review the literature on income shifting in developing countries and conclude that while developing countries suffer from profit shifting strategy, knowledge on the extent of the revenue losses is very inadequate.

The outcomes of most of the existing studies are difficult to interpret mainly due to problems regarding reliability of data and method used to measure income shifting (Fuest & Riedel, 2012). This argument is reasonable given that the extant literature on developing countries are mostly un-refereed reports that have not been exposed to critical peer review (e.g.

Baker, 2005; Christian Aid, 2009; Oxfam, 2000).³ In addition to that, poor data availability, both in terms of quality and quantity, has led to limited empirical research of profit shifting in developing countries (OECD, 2015a).

In the past few years the number of empirical studies that focus on finding evidence of profit shifting by MNEs in developing countries has upsurged. Still, none of them adopt HRA despite the fact that HRA has been identified as a primary approach to the empirical estimation of cross-border profit shifting (Dharmapala, 2014b).

A study that include developing countries in their analysis is Crivelli, et al. (2015). They use panel data for 173 developed and developing countries to answer the question of whether profit shifting really matter for developing countries. The results of the study suggest that profit shifting disadvantages developing countries as least as much as it does for the developed ones. They however acknowledge that the conclusion may not be robust due to some extent to the scarce firm-level data for developing countries in contrast to developed ones, suggesting that current research that focuses developing countries still encounters data-related issues. Another example, using a global dataset in 102 countries Johannesen, Tørsløv, and Wier (2016) find that less developed economies are more sensitive to profit shifting by multinational firms than more developed ones. The following is a brief summary of two recent studies that attempt to find evidence on profit shifting by multinationals in a particular developing country.

Janský and Prats (2015) examine whether more than 1500 MNEs operating in India⁴ shift profits in 2010 and find that the MNEs that have associations with tax haven countries reported

³ For example, Cobham (2005) estimates that developing countries lose US\$50 billion per year due to corporate sector shifts profits to lower-tax jurisdictions. However, as Fuest and Riedel (2009) suggest, this claim is not based on rigorous empirical analysis. The reason is that Cobham (2005) based his estimation on Oxfam (2000) that contains several issues. An important drawbacks of Oxfam (2000) is that its estimation is based on using average corporate tax rate of 30% while in fact many developing countries offer low or zero tax rates as incentives for corporate investments (Fuest & Riedel, 2009). Therefore, since Oxfam (2000) estimation ignores the incentives, its claim on the magnitude of the tax losses due to profit shifting in developing countries is likely to be overestimated (Fuest & Riedel, 2009).

⁴ According to World Bank's economy classifications as explained earlier in Subsection 3.1.1 of this thesis, like Indonesia, India and Malaysia have consistently categorised as developing countries.

lower profits and paid less Indian income taxes than MNEs that do not have the associations. They then conclude that the MNEs have incentives to shift profits to tax haven countries due to the lower tax rates as well as secrecy provisions that the countries offer.

Using financial data for 100 Malaysian listed corporations for 2009-2011, Salihu, Annuar, and Obid (2015) examine the relationships between foreign investors' interests and tax avoidance by means of profit shifting in Malaysia.⁴ Using generalized method of moment (GMM) estimator they demonstrate that the relationship between foreign investors' interests and tax avoidance is significantly positive among the large Malaysian corporations.

Despite difference in quantity and quality of the evidence, the four recent studies discussed above demonstrate that MNE affiliates operating in developing countries that have parent's country with lower tax rate tend to shift profits, suggesting that MNEs in developing countries do shift profits as in developed ones. Applying the findings of the prior studies to the case of Indonesia, it is likely that FOICs that have parents located in countries with higher tax rates will report higher profits in their Indonesian tax returns than FOICs that have parents located in countries with lower tax rates. This leads to the following hypothesis:

H1: The parent's tax rate of a FOIC is positively associated with the FOICs' reported profits (taxable income) in their Indonesian tax returns.

3. Research design

3.1. Sample selection and period of study

Our sample includes all foreign-owned firms with tax return data supplied by the Indonesian Directorate General of Tax (DGT, the Indonesian tax authority) under a data non-disclosure agreement. The study period covers the seven years from 2009 through 2015. The final sample consists of 3,361 (3,188) observations for the regression model using accounting profit (taxable income) as the dependent variable, most of which (about 73 percent for both

models) are registered in tax offices located in the Java island. Table 1 presents the final sample derivation for both dependent variables. We apply several filters. First, we exclude FOICs that report loss in their tax return. Although losses reported in tax return could be generated from profit shifting activities, it is impossible to distinguish a genuine business loss from a loss caused by profit-shifting. Moreover, it is a common practice in the literature to exclude loss-making firms from the sample (Dharmapala, 2014b). We also exclude observations with negative tangible fixed assets because it is likely that the figures are erroneous.

The reason to start the study from 2009 is because the DGT's data recording and administration have been more reliable since 2009 after the completion a thorough tax administration reform in Indonesia in 2008 (DGT, 2009). The reason to end it in 2015 is simply because that is the latest year that the data are supplied by the DGT. The distribution of countries in which the parents of FOICs are located can be found in Appendix 1.

Table 1
Derivation of the Final Sample of Firm-Year Observations

	Accounting Profit	Taxable Income
Number of firm-years which the dependent variable are available in 2009-2015	7,905	6,541
Less:		
Number of firm-years that report loss	4,514	3,351
Number of firm-years with tangible fixed assets less than zero	1	2
Final sample of firm-year observations	3,390	3,188

3.2. Measurement of variables and regression model

This study investigates whether FOICs shift profits out of Indonesia in response to variation in parents' tax rates. See Appendix 2 for STR of countries over the study period. While our paper examines whether MNEs from various countries operating in Indonesia shift profits out of Indonesia and is different from Hines and Rice (1994) who examine whether US MNEs operating in various countries shift profits to low tax jurisdictions, we believe that HRA is suitable for our paper due to the following reasons. First, the model of Hines and Rice (1994) is based on the Cobb-Douglas production function. Basically, Cobb-Douglas production function represents the relationship between the output in terms of income and the input mainly in terms of capital and labour. Therefore, the HRA is suitable for firm-level studies as well as country-level studies. Second, the basic premise of HRA is that the observed profit consists of two components: the "true" profit and the "shifted" profit. This premise is applicable to all MNE affiliates, either in many countries or in a single country.

However, we modify the original HRA in equation (1) in several ways as follows. The first modification is related to the dependent variable. We use pre-tax accounting profit (or earnings before taxes) rather than pre-tax nonfinancial income (or earnings before interest and taxes) as the dependent variable because our paper focuses on finding indirect evidence of cross-border profit shifting in Indonesia by investigating the effect of parents' tax rate variation on the profits reported by FOICs in their Indonesian tax returns. The estimated effect is expected to capture potential cross-border profit shifting activities through all possible channels such as transfer pricing and high debt financing. Employing earnings before interest and taxes is likely to be necessary when one tries to disentangle the transfer pricing and debt shifting channels (Dharmapala & Riedel, 2013).⁵ Therefore, as in prior studies (e.g. Dharmapala &

⁵ As mentioned earlier in Section 2.1 of this paper, the reason for Hines and Rice (1994) to exclude interest is that they do not have reliable data.

Riedel, 2013; Huizinga & Laeven, 2008; Markle, 2015) we use pre-tax accounting profit as the dependent variable to detect the existence of cross-border profit shifting in Indonesia.

In addition to the pre-tax accounting profit (hereafter accounting profit or *AP*) we also use taxable income (*TI*) reported by MNEs in Indonesia tax return as the dependent variable. The main reason to do so is that taxable income is seen as a proxy that better captures the indication of profit shifting than accounting profit (OECD, 2015a).

The second modification is also related to the dependent variable. Unlike Hines and Rice (1994) who use country-level data, we utilise firm-level data. Moreover, we have only one source country in our data (i.e. Indonesia). Therefore, rather than using average tax rate in the local country (τ), we use parent's tax rate (*PTR*) as the independent variable. Using *PTR* as the independent variable is expected to provide evidence of the impact of parent's tax rate on accounting profit and taxable income reported by FOICs in their Indonesian tax returns. We predict that the coefficient of *PTR* is positive, i.e. the higher (lower) the tax rate of the parent's country, the higher (lower) are the accounting profit and taxable income reported in Indonesia.

The third modification is that we use statutory tax rate (*STR*) instead of effective tax rate (*ETR*) as the *PTR*. While there has been a debate on which one is a better proxy for tax incentives to shift profits, *STR* may act as a better proxy for incentive to shift profits because it is set by the government and therefore is exogenous to firm's choice (Dharmapala, 2014b).

The fourth modification concerns the control variables. Firstly, we drop the control variable for the level of productivity in the local country (*A*). The reason to exclude this variable is because we have only one source country (i.e. Indonesia) in our data. Secondly, since our study uses panel data as opposed to cross-sectional data as in Hines and Rice (1994), we include both firm fixed effect and year fixed effect in the regression model to control for changes in profitability across firms and across years.

HRA is likely to be more suitable for examining profit shifting by MNEs based in different countries that have affiliates operate in a single country, because a single-country study does not need to worry about the real price of capital and labour that may differ between countries, which is one concern in the HRA (Hines & Rice, 1994).

These modifications lead to the two regression models as presented in equation (2) and (3) that we use to examine the impact of parents' tax rate variation on accounting profit and taxable income, respectively, reported by the FOICs in their Indonesian tax returns.

$$\log AP_{it} = \beta_0 + \beta_1 PTR_{it} + \beta_2 \log K_{it} + \beta_3 \log L_{it} + \mu_i + \delta_t + \varepsilon_{it} \quad (2)$$

$$\log TI_{it} = \beta_0 + \beta_1 PTR_{it} + \beta_2 \log K_{it} + \beta_3 \log L_{it} + \mu_i + \delta_t + \varepsilon_{it} \quad (3)$$

where:

AP_{it} is the pre-tax accounting profit reported by FOIC i for year t ;

TI_{it} is the taxable income reported by FOIC i for year t ;

PTR_{it} is the parent's STR of FOIC i for year t ;

K_{it} is capital input of FOIC i in year t , proxied by fixed tangible assets;

L_{it} is labour input of FOIC i in year t , proxied by employment compensation;

μ_i is FOIC i fixed effect;

δ_t is year t fixed effect; and

ε_i is the error term.

We perform diagnostic tests to confirm that the regression assumptions listed by Stock and Watson (2015) are met to ensure the validity of our panel regression results. The tests include controlling for firm fixed effect by clustering standard errors by entity (each cluster consists of an entity i.e. observations of the same firm for different years). This procedure allows "for heteroscedasticity and for arbitrary correlation within a cluster, or grouping, but assume that the regression errors are uncorrelated across clusters" (Stock & Watson, 2015, p. 413).

As part of the assumption validity check, a test of collinearity is conducted by regressing both dependent variables on all of the independent variables and calculating the variance inflation factors (VIFs) for each variable. The result (un-tabulated) shows that VIFs are in the range of 1.02 to 2.59, much lower than the general tolerance value of 10, suggesting the absence of multicollinearity issue (i.e. no variable considered as a linear combination of other variables).

In addition, to make sure that our estimation model provides a reliable prediction we also examine how good our regression model in equations (2) and (3) in predicting the dependent variables ($\log AP$ and $\log TI$, respectively). While equation (2) might be a better model, both equations seem to be fine at making prediction.

4. Empirical results

4.1. Summary Statistics

We present descriptive statistics for our sample in Table 2. We note that the mean value of $\log AP$ ($\log TI$) is 22.073 (22.095), suggesting that the sample of FOICs reported accounting profit (taxable income) of almost IDR4 billion, equivalent to approximately USD300,000 using 2015 exchange rate for tax purposes. PTR is ranging from zero to 55 percent. Some countries in the sample that have zero STR are British Virgin Islands, Cayman Islands, Channel Islands and Marshall Islands. A country in the sample that has 55 percent STR is United Arab Emirates.

Table 2
Descriptive Statistics

A. Profit

Variable	N	Mean	Median	Standard Deviation	Minimum	Maximum
<i>logAP</i>	3,390	22.073	22.123	2.566	11.967	29.948
<i>PTR</i>	3,390	0.267	0.25	0.092	0	0.55
<i>logK</i>	3,390	23.498	23.807	2.651	9.821	30.359
<i>logL</i>	3,390	22.669	22.885	2.008	13.160	28.438

logAP is natural log of pre-tax accounting profit reported by FOICs in their Indonesian tax returns (Total of commercial net income in the Indonesian tax return 1771-I Section 3 plus Income tax in the Indonesian tax return 1771-I Section 5f). *PTR* is the parent's STR. *logK* is natural log of tangible fixed assets reported in Indonesian tax return (Indonesian tax return 1771, Special attachment, Transcript of elements citation of financial statement Sections I13-land and buildings and I14-other fixed assets). *logL* is natural log of compensation reported in Indonesian tax return (Indonesian tax return 1771 Section II2.6-Total salaries, wages, bonuses, gratifications, honorarium, and other compensations).

B. Taxable Income

Variable	N	Mean	Median	Standard Deviation	Minimum	Maximum
<i>logTI</i>	3,188	22.095	22.132	2.620	0	33.170
<i>PTR</i>	3,188	0.267	0.25	0.092	0	0.55
<i>logK</i>	3,188	23.599	23.868	2.551	9.821	30.359
<i>logL</i>	3,188	22.750	22.960	1.947	13.160	28.438

logTI is natural log of taxable income reported in Indonesian tax return (Indonesian tax return 1771 Section A1-Fiscal net income). See Panel A for definitions of other variables.

Table 3 shows Pearson correlation between variables. Parent's tax rate (*PTR*) is positively correlated with both natural log of accounting profit (*logAP*) and natural log of taxable income (*logTI*) and is significant at the one percent level, consistent with the prediction.

Table 3
Pearson Correlation Matrix

A. Profit

	<i>logProfit</i>	Parent tax rate	<i>logK</i>	<i>logL</i>
<i>logAP</i>	1			
<i>PTR</i>	0.192 ***	1		
<i>logK</i>	0.726 ***	0.098 ***	1	
<i>logL</i>	0.761 ***	0.134 ***	0.773 ***	1

B. Taxable Income

	<i>logTI</i>	Parent tax rate	<i>logK</i>	<i>logL</i>
<i>logTI</i>	1			
<i>PTR</i>	0.211 ***	1		
<i>logK</i>	0.709 ***	0.121 ***	1	
<i>logL</i>	0.746 ***	0.138 ***	0.777 ***	1

***, **, and * indicate significance at 1 percent, 5 percent, and 10 percent levels in a two-tailed test, respectively.

4.2. Regression results

The regression results are presented in Table 4. After controlling for capital and labour inputs our regressions find a positive relationship between parent's tax rate and both reported profit and taxable income. The estimates imply that a one percentage point lower tax rate of the parent's country decreases profit (taxable income) reported by the MNEs in their Indonesian tax returns by 2.55 percent (2.89 percent). This figure is similar to what Hines and Rice find in their study: a one percentage point higher in affiliate's tax rate decreases reported profits by 2.83 percent. In both regressions, the coefficients of *PTR* are significant at the one percent level, suggesting that parent's tax rate is a significant incentive for FOICs to report higher or lower profit in their Indonesian tax returns. This result affirms prior studies'

suggestions and is consistent with the hypothesis that FOICs that have parents with low tax rates tend to shift profits out of Indonesia.

Table 4
Regression Results – Effect of Parent’s Tax Rate on Reported Accounting Profit and Taxable Income

$\log AP_{it} / \log TI_{it} = \beta_0 + \beta_1 PTR_{it} + \beta_2 \log K_{it} + \beta_3 \log L_{it} + \mu_i + \delta_t + \varepsilon_{it}$			
	Expected sign	Dependent variable : Natural log of accounting profit	Dependent variable : Natural log of taxable income
<i>PTR</i> (parent’s tax rate)	+	2.555*** (4.97)	2.894*** (5.80)
<i>logK</i> (natural log of capital)	+	0.329*** (11.00)	0.326*** (10.11)
<i>logL</i> (natural log of labour)	+	0.615*** (14.76)	0.651*** (14.30)
Year			
2010	?	-0.156** (-2.14)	-0.104 (-1.47)
2011	?	-0.214*** (-2.79)	-0.153** (-2.16)
2012	?	-0.281*** (-3.33)	-0.234*** (-2.94)
2013	?	-0.062 (-0.60)	-0.102 (-1.00)
2014	?	-0.110 (-1.16)	-0.92 (-0.97)
2015	?	-0.345*** (-3.77)	-0.471*** (-3.74)
Constant		-0.090 (-0.17)	-1.005 (-1.70)
R²		0.637	0.612
<i>n</i>		3,390	3,188

t-statistics appear in parentheses. ***, **, and * indicate significance at the 1 percent, 5 percent, and 10 percent levels in a two-tailed test, respectively. See Table 2 for variables definitions.

The coefficients of *logK* and *logL* are both positive and are significant at the one percent level. Moreover, the regression model represented by equation (2) and (3) have adjusted R-

squared of 63.7 percent and 61.2 percent, respectively. These are consistent with the prediction that capital and labour inputs are the main inputs to generate profits.

Another crucial finding is related to the change in magnitude of profit shifting during the study period. All coefficients for *Year* are constantly negative, suggesting that FOICs report lower profit and taxable income in later years compared to 2009. In the accounting profit regression model, compared to 2009 which is the base year, the coefficients of the *Year* dummy variables are significant at the five percent level for 2010, and at the one percent level for 2011 and 2012. The increasing magnitudes of the regression coefficients for *Year* over time suggest that FOICs reported lower and lower profits from 2009 to 2012. On the other hand, in the taxable income regression, the coefficients are significantly negative at the five percent level for 2011 and the one percent level for 2012 with increasing magnitudes. In the last three years of the study period, the level of significance of the coefficients is the same for both regressions: insignificant in 2013 and 2014, and then back to be significant at the one percent level in 2015 with the magnitude of the coefficient reaching its peak.

During 2009-2015 there had been no significant changes in macroeconomic conditions in Indonesia. However, our analysis show inconsistent behaviour of FOICs to shift profits from Indonesia during the study period. We suspect that the reason why foreign companies ease their profit shifting activities in 2013 and 2014, is likely to be associated with the OECD's Base Erosion and Profit Shifting project launched in February 2013. This soon became a global movement where tax authorities of many developed countries (OECD member countries) and major developing countries (member of G20), including Indonesia, work together to tackle profit shifting by MNEs. As a result, FOICs might have restrained their profit shifting activities. However, after two years holding back, FOICs realize that Indonesia government has not taken sufficient actions to fight against profit shifting by MNEs within the country so they resume their practice of shifting their profits out of Indonesia in 2015.

We also run regressions that exclude potential outliers. Overall, the coefficients for the independent variables and the two main control variables remain positively significant at the one percent level, suggesting that the regression results presented in Table 4 are robust. Some minor differences do exist, especially the changes in coefficients for the *Year*. Nevertheless, the trend of shifting the profits does not change: there is a strong indication that FOICs adopted a ‘wait and see’ attitude in 2013 and 2014.

As mentioned in section 2.1 of this paper, Huizinga and Laeven (2008) argue that the reason Hines and Rice (1994) obtain greater effect of tax rate on reported profit compared to their study is because the latter utilises data that include tax haven countries located outside Europe. In the regressions to assess the impact of potential outliers, we classify FOICs that have parent’s country with zero tax rate as potential outliers. Quite the opposite of what Huizinga and Laeven (2008) find, our regression results (un-tabulated) indicate that the effect of parents’ tax rate variation on reported profit measures is even larger after excluding zero-tax rate countries: one percentage point lower tax rate decreases reported accounting profit (taxable income) by 3.99 percent (4.39 percent).

5. Summary and conclusions

Profit shifting by MNEs is a global concern as many large MNEs are accused of utilising profit shifting strategies to avoid tax worldwide. In this paper, we focus on examining the existence of profit shifting by foreign MNEs in Indonesia. In particular, we use HRA to examine the effect of the parents’ tax rate variation on the accounting profit and taxable income reported by FOICs from 2009 to 2015. We follow HRA because it is one of the most recognized and most cited approach to detect the presence of tax-motivated profit shifting. We use confidential tax return data obtained under a non-disclosure agreement with the DGT, the Indonesian tax authority.

The regression results show that FOICs (i.e. MNE affiliates in Indonesia) do shift profits out of Indonesia. Another crucial finding is that before the OECD introduced BEPS project in 2013, FOICs demonstrated an increasing trend of shifting profits out of the country. But once Indonesia join the BEPS project, the magnitude of profit shifting was held back for two years from 2013 to 2014. In 2015, the size of profit shifting resumed its upward trajectory. We suspect that this is likely due to the lack of real actions taken by the Indonesian government to fight against profit shifting by FOICs after joining the BEPS project.

Existing reports and studies suggest that the impact of profit shifting by MNEs on corporate tax revenue in developing countries is likely to be substantial and inevitable. However, it seems that the policy makers of developing countries encounter difficulties in controlling it. According to Dourado (2015), developing countries face difficulties in addressing profit shifting issues as well as in joining tax cooperation because they lack technical and human resources. This is likely to be the source of the problem in Indonesia. The country should start taking actions to overcome the problem. Otherwise, profit shifting by MNEs will continue to erode the government revenue from the corporate income tax sector.

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APPENDICES

APPENDIX 1:

Final Sample by Country of Parent, 2009-2015

A. Accounting Profit

Country	Year							Total
	2009	2010	2011	2012	2013	2014	2015	
Japan	98	108	116	125	80	144	116	787
Korea, Republic Of	77	91	114	112	44	92	186	716
Singapore	55	59	70	63	37	60	65	409
Malaysia	22	22	29	22	18	27	45	185
China	11	13	19	13	5	14	50	125
Taiwan	18	22	21	21	5	11	25	123
United States	10	17	15	16	17	20	19	114
Netherlands	19	19	14	12	9	15	15	103
Australia	14	11	14	11	15	16	16	97
Germany	10	13	15	15	13	14	17	97
British Virgin Islands	14	16	19	13	8	10	12	92
United Kingdom	12	13	16	13	8	10	10	82
Hong Kong, SAR	11	11	10	9	6	7	14	68
France	10	10	11	10	7	4	13	65
India	6	6	11	6	4	5	14	52
Switzerland	8	7	7	6	7	6	3	44
Thailand	3	3	4	2	7	6	2	27
Mauritius	4	4	4	3	2	4	5	26
Luxembourg	1	2	4	4	3	4	3	21
Spain	0	1	0	4	3	3	3	14
Italy	2	1	2	3	1	1	2	12
Belgium	1	1	2	2	1	2	2	11
Canada	1	2	3	4	0	0	1	11
Sweden	0	2	1	2	2	1	3	11
Austria	1	2	2	1	1	1	2	10
Samoa	1	1	1	0	2	2	3	10
Denmark	1	1	1	1	0	3	2	9
Marshall Islands	1	1	1	1	1	1	1	7
Pakistan	2	2	0	0	0	1	1	6
Cayman Islands	0	0	1	1	1	1	1	5
Liberia	1	1	0	1	1	1	0	5
Philippines	1	1	1	0	0	0	2	5
Channel Islands	1	0	1	1	1	0	0	4
Panama	0	0	1	1	1	0	1	4
Poland	0	1	1	1	0	1	0	4
Brunei	0	0	0	1	1	1	0	3

Country	Year							Total
	2009	2010	2011	2012	2013	2014	2015	
Finland	0	0	1	0	1	1	0	3
Jordan	0	0	1	0	1	0	1	3
Argentina	0	0	0	1	0	0	1	2
Liechtenstein	0	0	0	0	1	1	0	2
Norway	1	0	0	0	0	0	1	2
Seychelles	1	0	0	0	0	1	0	2
United Arab Emirates	1	0	1	0	0	0	0	2
Bahrain	0	0	0	0	0	0	1	1
Czech Republic	0	0	0	0	0	0	1	1
Egypt	0	0	0	0	0	0	1	1
Estonia	0	0	0	0	0	0	1	1
Guinea	0	1	0	0	0	0	0	1
Iran	1	0	0	0	0	0	0	1
Iraq	0	0	0	0	0	0	1	1
Lebanon	0	0	0	0	0	0	1	1
New Zealand	0	0	0	1	0	0	0	1
Vietnam	0	0	0	0	0	0	1	1
Total	420	465	534	502	314	491	664	3,390

B. Taxable Income

Country	Year							Total
	2009	2010	2011	2012	2013	2014	2015	
Japan	99	108	120	126	73	129	76	731
Korea, Republic Of	89	97	127	118	44	83	150	708
Singapore	62	64	74	69	42	53	41	405
Malaysia	24	22	30	22	16	27	26	167
Taiwan	17	21	22	20	6	10	15	111
United States	12	17	18	18	17	19	10	111
Netherlands	20	18	14	11	10	11	10	94
China	9	11	16	14	7	12	21	90
Australia	15	11	16	12	12	9	12	87
Germany	10	12	14	15	12	12	12	87
United Kingdom	14	16	17	15	9	6	8	85
British Virgin Islands	15	12	17	12	8	10	10	84
Hong Kong, SAR	11	11	13	10	7	7	11	70
France	9	9	10	9	8	3	5	53
Switzerland	8	6	8	7	10	6	3	48
India	6	7	11	6	5	4	6	45
Thailand	3	3	4	3	6	6	2	27
Mauritius	4	4	4	3	2	3	2	22
Luxembourg	2	2	4	4	3	3	2	20

Country	Year							Total
	2009	2010	2011	2012	2013	2014	2015	
Sweden	1	3	2	3	2	2	2	15
Italy	2	1	3	3	2	1	2	14
Canada	2	2	3	4	0	0	1	12
Belgium	1	1	2	2	1	2	2	11
Samoa	1	1	1	1	2	2	3	11
Spain	0	1	0	3	2	2	3	11
Austria	1	2	2	1	1	1	1	9
Marshall Islands	1	1	1	1	1	1	1	7
Denmark	1	1	1	1	0	2	0	6
Pakistan	2	2	1	1	0	0	0	6
Liberia	1	1	0	1	1	1	0	5
Channel Islands	1	0	1	1	1	0	0	4
Panama	0	0	1	1	1	0	1	4
Brunei	0	0	0	1	1	1	0	3
Liechtenstein	0	1	0	0	1	1	0	3
Philippines	1	0	1	0	0	0	1	3
Poland	0	1	1	1	0	0	0	3
Jordan	0	0	1	0	1	0	0	2
Norway	1	0	0	0	0	0	1	2
Seychelles	0	0	0	0	0	1	1	2
United Arab Emirates	1	0	1	0	0	0	0	2
Argentina	0	0	0	1	0	0	0	1
Cayman Islands	0	0	0	0	0	0	1	1
Guinea	0	1	0	0	0	0	0	1
Iran	1	0	0	0	0	0	0	1
Iraq	0	0	0	0	0	0	1	1
Kenya	0	0	1	0	0	0	0	1
Lebanon	0	0	0	0	0	0	1	1
New Zealand	0	0	0	1	0	0	0	1
Total	447	470	562	521	314	430	444	3,188

APPENDIX 2:**Statutory Tax Rates, 2009-2015**

Location	Tax Rate %						
	2009	2010	2011	2012	2013	2014	2015
Argentina	35	35	35	35	35	35	35
Australia	30	30	30	30	30	30	30
Austria	25	25	25	25	25	25	25
Belgium	33.99	33.99	33.99	33.99	33.99	33.99	33.99
British Virgin Islands	0	0	0	0	0	0	0
Brunei		23.5	22	21	20	20	18.5
Canada	33	31	28	26	26	26.5	26.5
Cayman Islands	0	0	0	0	0	0	0
Channel Islands	0	0	0	0	0	0	0
China	25	25	25	25	25	25	25
Denmark	25	25	25	25	25	24.5	23.5
France	33.33	33.33	33.33	33.33	33.33	33.33	33.33
Germany	29.44	29.41	29.37	29.48	29.55	29.58	29.65
Guinea	35	35	35	35	35	35	35
Hong Kong, SAR	16.5	16.5	16.5	16.5	16.5	16.5	16.5
India	33.99	33.99	32.44	32.45	33.99	33.99	34.61
Indonesia	28	25	25	25	25	25	25
Iran	25	25	25	25	25	25	25
Iraq	15	15	15	15	15	15	15
Italy	31.4	31.4	31.4	31.4	31.4	31.4	31.4
Japan	40.69	40.69	40.69	38.01	38.01	35.64	33.06
Jordan	25	14	14	14	14	14	20
Kenya				30	30	30	30
Korea, Republic of	24.2	24.2	22	24.2	24.2	24.2	24.2
Lebanon	15	15	15	15	15	15	15
Liberia	25	25	25	25	25	25	25
Liechtenstein			12.5	12.5	12.5	12.5	12.5
Luxembourg	28.59	28.59	28.8	28.8	29.22	29.22	29.22
Malaysia	25	25	25	25	25	25	25
Marshall Islands	0	0	0	0	0	0	0
Mauritius	15	15	15	15	15	15	15
Netherlands	25.5	25.5	25	25	25	25	25
New Zealand	30	30	28	28	28	28	28
Nigeria	30	30	30	30	30	30	30
Norway	28	28	28	28	28	27	27
Pakistan	35	35	35	35	35	34	33
Panama	30	27.5	25	25	25	25	25

Location	Tax Rate %						
	2009	2010	2011	2012	2013	2014	2015
Philippines	30	30	30	30	30	30	30
Poland	19	19	19	19	19	19	19
Samoa	27	27	27	27	27	27	27
Seychelles	40	33	33	33	33	33	33
Singapore	18	17	17	17	17	17	17
Spain	30	30	30	30	30	30	28
Sweden	26.3	26.3	26.3	26.3	22	22	22
Switzerland	18.96	18.75	18.31	18.06	18.01	17.92	17.92
Taiwan	25	17	17	17	17	17	17
Thailand	30	30	30	23	20	20	20
Turkey	20	20	20	20	20	20	20
United Arab Emirates	55	55	55	55	55	55	55
United Kingdom	28	28	26	24	23	21	20
United States	40	40	40	40	40	40	40

Source: Purba and Tran (2017)