HOW DO MULTINATIONALS SHIFT PROFITS OUT OF INDONESIA?

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Abstract

Prior studies indicate that there are two main channels used by multinational enterprises (MNEs) to shift profits from high-tax countries to low-tax countries: transfer pricing and debt financing. This study investigates profit shifting through these channels in Indonesia using Indonesian tax return data. The performances of foreign-owned Indonesian companies (FOICs), which are Indonesian affiliates of foreign MNEs, and domestic-owned Indonesian companies (DOICs) are compared in terms of earnings before interest and taxes scaled by total sales, and long-term debt to related parties scaled by total assets, in order to capture profit shifting using the transfer pricing and debt financing channels respectively. Propensity score matching and coarsened exact matching are used to match FOICs as the treatment group and DOICs as the control group. The results show that FOICs use both transfer pricing and debt financing to shift profits out of Indonesia.

JEL Classification Codes: E62, F23, H26.
Keywords: Profit Shifting, Transfer Pricing, Debt Financing, Indonesia.

1. INTRODUCTION

The "empirical identification of the existence and magnitude" of cross-border profit shifting is characterised by difficulties (Dharmapala & Riedel, 2013, p. 95). As a result, most empirical studies focus on finding "an indirect identification strategy that measures the impact of variations in corporate tax rates on the profitability of multinational subsidiaries" in different countries (Dharmapala & Riedel, 2013, p. 95). Dharmapala and Riedel (2013) note that only a "small number of studies" attempt to find more direct evidence, such as the channels used by MNEs to shift profits (p. 95).

MNEs can use several channels to shift profits in order to lower their global tax liabilities. The two most common channels used are cross-border transfer pricing and high debt financing arrangements. Most prior studies investigate profit-shifting channels used by MNEs that rely on corporate tax rate variations between the country in which the parent company is located and the country in which the subsidiary operates (see, for example, Buettner & Wamser, 2013; Clausing, 2003; Swenson, 2001; Vicard, 2015). Moreover, most prior studies use data from developed countries and few use data from developing countries.

In the case of Indonesia, two Indonesian Finance Ministers, Agus DW Martowardojo (detikFinance, 2013) and his successor, Bambang PS Brodjonegoro (detikFinance, 2015), issued statements indicating that thousands of FOICs have not paid corporate income tax (CIT) for many years. Brodonegoro (detikFinance, 2015) noted that companies have used transfer pricing and intra-group debt financing to avoid paying Indonesian CIT. While the two

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statements are not empirical evidence of the existence of cross-border profit shifting in Indonesia per se, they indicate that the nation may suffer from such tax avoidance strategies.

Purba and Tran (2020) investigate whether FOICs, i.e. Indonesian affiliates of foreign MNEs, shift profits out of Indonesia by examining how different statutory tax rates (STRs) in Indonesia and the source country of investment impact the taxable income that FOICs report in their Indonesian tax returns. The results show that the lower the parent company's STR, the lower the taxable income reported by the FOICs, indicating that FOICs shift profits to parent companies located in low tax countries. The present study extends Purba and Tran's (2020) study by investigating two channels that FOICs may use to shift profit out of Indonesia.

More precisely, this article investigates whether FOICs use intra-firm transfer pricing and/or debt financing by related parties to shift profits out of Indonesia, a major developing country, by taking a different approach. The analyses include comparisons between FOICs and comparable domestic-owned Indonesian companies (DOICs)[3] in terms of two indicators that are expected to capture the two profit-shifting channels. Specifically, this study compares earnings before interest and taxes scaled by total sales (*EBIT/S*) and long-term liabilities with related parties[4] scaled by total assets (*LTL_RP/TA*) to capture the transfer pricing and debt financing channels of profit shifting respectively.

This study uses confidential corporate tax return data provided by Indonesia's tax authority, the Directorate General of Tax (DGT), including data from financial reports. FOICs (as the treatment group) and DOICs (as the control group) are matched in pairs using the propensity score matching (PSM) and coarsened exact matching (CEM) procedures. Statistical analyses using paired *t*-tests and ordinary least squares (OLS) regressions on the matched samples find that FOICs shift profits out of Indonesia by means of both transfer pricing and debt financing.

The remainder of this article is organised as follows. First, the relevant institutional settings in Indonesia are described. Section three presents a brief literature review and develops the hypotheses for testing. Section four explains the research design and section five presents the empirical results. The contributions made by this study and possible avenues for future research are discussed in the concluding section.

2. INDONESIAN INSTITUTIONAL SETTINGS

2.1. Corporate Tax System in Indonesia

The Indonesian CIT rate was 30% between 1984 and 2008. It then decreased to 28% in 2009 and to 25% in 2010. Indonesia's Income Tax Law 1983 (ITL 1983) does not allow the CIT paid on company profits to be attached to the dividends and claimed by shareholders as a tax credit. This means that Indonesia adopts the classical system of company taxation rather than the dividend imputation system. In the classical system of company taxation, income tax paid by a company cannot be passed on to its shareholders as tax credit, whereas the dividend imputation system allows this to occur. As Indonesia adopts a classical system that taxes company profit and shareholders' dividend income separately, Indonesian companies have an incentive to avoid CIT in order to maximise their shareholders' wealth.

[3] At least 98% of the sample of DOICs in this study do not involve any foreign ownership.
[4] Income Tax Law No. 7/1983 as lastly amended by Law No. 7/2021 Article 18(4a) of the ITL 1983 refers to related parties as two companies or more that are connected by ownership or control of management or technology.

In Indonesia, consolidation only applies to financial reporting and is not adopted for tax purposes. As a result, all intra-group transactions, including transfer pricing and debt financing, are only eliminated in consolidated financial reports and remain reflected in corporate tax returns. This institutional arrangement allows the present study to investigate intra-group transactions using tax return data by examining whether FOICs use intra-group transfer pricing and/or debt financing to shift profits out of Indonesia.

Article 4(1) of the ITL 1983 states that all income received from within and outside of Indonesia is subject to Indonesian income tax, suggesting that the country has adopted the worldwide income system. To avoid the double taxation of foreign income, Article 24 of the ITL 1983 allows tax that has already been paid offshore by resident taxpayers to be credited against tax payable in Indonesia in the same year as long as it does not exceed a certain level.[5] Scholes et al. (2015) suggest that MNEs in countries that impose worldwide tax systems may have more incentive to shift profits than those in countries that impose territorial tax regimes. This is because, while most countries with worldwide tax systems allow resident taxpayers to offset tax paid in foreign countries against their domestic tax liability, in some cases the full amount of tax paid overseas cannot be claimed because of the tax offset limit imposed by the government.

2.2. How Indonesia Fights Profit Shifting by Foreign-Owned Indonesian Companies

Although there is little supporting empirical evidence, the DGT is aware that the incidence of international tax avoidance has increased because of the borderless economy. The following statement depicts the DGT's concern about tax avoidance by FOICs, particularly by means of transfer pricing arrangements:

> Under the current globalisation, the intensity and magnitude of transnational transactions are more dominant in the economy either by related parties or independent parties. This brings different tax implications and should receive serious concerns. Transfer pricing is closely related to transactions between affiliated parties, which must be strictly supervised since it can be used to reduce the tax that must be paid (tax avoidance). (DGT, 2010, p. 80)

The government's concern can also be observed in the amendments to the ITL that have been passed by the legislature since the law came into force on 1 January 1984. Article 18 of the ITL 1983, regarding international tax issues, has been included in these amendments three times. The tax avoidance provisions—especially those related to company tax avoidance—according to Article 18 of the ITL 1983 and its elucidations, as lastly amended in 2021 and taking effect on 1 January 2022, include three specific anti-avoidance rules, as follows:[6]

> 1. Thin capitalisation rules: the Finance Minister is authorised to issue a decree on the debt-to-equity ratio for tax purposes;

[5] Indonesian Finance Minister Decree No. 165/2002 specifies that the limit is calculated as follows: $\frac{\text{income from overseas}}{\text{global TI}}$ X total tax payable.

[6] The ITL 1983 does not contain any general anti-avoidance rule, i.e. anti-tax avoidance rule that is not limited to certain tax subjects or objects.

2. Controlled foreign company (CFC) rules: the Finance Minister is authorised to determine when a resident taxpayer is deemed to receive dividends from a non-listed foreign company provided that the taxpayer (alone or together with other resident taxpayers) controls at least 50% of the shares of the foreign company; and

3. Transfer pricing rules: the Director General of Tax is authorised to redetermine income and deductions, and to reclassify debt as equity for taxable income computation purposes for transactions between related parties.

The amendments to Article 18 of the ITL 1983 detailed above are the main provisions used to combat tax avoidance by MNEs in Indonesia. These new provisions came into force on 1 January 2009 and remained unchanged until 2015. Following the authority given by Article 18(2) of the ITL 1983, the Finance Minister issued Finance Minister Regulation No. 256/2008 in 2008, which contains the CFC provisions. However, there were delays in issuing the operating regulations for thin capitalisation and transfer pricing rules as mandated by Article 18(1) and (3) of the ITL 1983 respectively. The Director General of Tax issued the Director General of Tax Regulation PER-43/PJ/2010 concerning the Implementation of Arm's Length Principle for Transactions with Related Parties in 2010, which came into effect on 6 September 2010. The Finance Minister eventually enacted Regulation of the Minister of Finance of the Republic of Indonesia (PMK) number 169/PMK.03/2015 on Determination of Corporate Taxpayer's Debt to Ratio for Income Tax Calculation Purposes, which contains the thin capitalisation provisions, on 9 September 2015, although this did not come in force until 2016.

Previous studies find that transfer pricing rules effectively increase the use of the arm's length principle on intra-firm trade (e.g. Halperin & Srinidhi, 1987; Schjelderup & Weichenrieder, 1999) and that thin capitalisation rules effectively lessen the incentive to use internal loans for tax avoidance (e.g. Buettner et al., 2012; Buslei & Simmler, 2012). Therefore, the absence of transfer pricing rules before September 2010 and the absence of thin capitalisation rules before 2016 may have provided FOICs with opportunities to shift profits out of Indonesia.

3. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

3.1. The Meanings of Transfer Pricing, the Arm's Length Principle, and Debt Financing

Markusen (1995) defines MNEs as "firms that engage in foreign direct investments" (FDIs), i.e. investments "in which the firm acquires a substantial controlling interest in a foreign firm or sets up a subsidiary in a foreign country" (p. 170). He proposes that the fundamental reason why an MNE may choose to establish an affiliate overseas is that MNEs are different from domestic companies: "If foreign multinational enterprises are exactly identical to domestic firms, they will not find it profitable to enter the domestic market" (Markusen, 1995, p. 173). Further, he discusses several inherent disadvantages and advantages that MNEs commonly encounter. The disadvantages include the higher "costs of doing business in another country, including communications and transport costs, higher costs of stationing personnel abroad, barriers due to language, customs, and being outside the local business and government networks" (Markusen, 1995, p. 173). The inherent advantages that MNEs have are "superior technology or lower costs due to scale economies" (Markusen, 1995, p. 173). In addition, Markusen (1995) referred to the ownership, location and internalisation (OLI) framework proposed by Dunning (1977). The framework posits that the advantages of OLI must be present

for MNEs to undertake FDI. The two paragraphs below describe the three conditions according to Markusen's explanation.

First, ownership is any advantage that represents a "valuable market power" that other firms do not possess, "such as a patent, blueprint, or trade secret", or "something intangible, like a trademark or reputation for quality" (Markusen, 1995, p. 173). Secondly, location refers to the advantage that an MNE can obtain by producing goods in a foreign country. Markusen (1995) notes that these advantages can include lower "tariffs, quotas, transport costs, and cheap factor prices", as well as better "access to customers" (p. 173).

The third, and probably most decisive advantage, is internalisation. For some MNEs, possessing the first two advantages (i.e. ownership and location) may be insufficient to set up a foreign affiliate because they have alternative options, such as providing a domestic firm in the targeted foreign country with a licence to produce the goods or use their production method. By doing this, the parent company does not need to set up a manufacturing facility in that country, something that can be a costly and difficult process. The advantage of internalisation encourages MNEs to set up affiliates in foreign countries. Internalisation is defined as an opportunity to exploit a product or process internally among companies within the same ownership (see Markusen, 1999). That is, internalisation gives MNE affiliates located in different countries opportunities to arrange internal prices and processes for products that are traded within the same group. This explains why internalisation is the most decisive advantage for some MNEs setting up foreign subsidiaries. Citing Rugman (1986), Markusen (1995) wrote that "internalisation is really the only thing that matters to understanding the multinational" (p. 174).

Cross-border profit shifting is a good example of the benefits of internalisation. MNEs can use various channels to shift profits from one subsidiary to others located in different tax jurisdictions. Two profit-shifting channels are extensively studied in the literature. The first channel is intra-group transfer pricing, whereby MNEs set the prices for cross-border transactions between affiliates within the same group to shift profits in order to avoid taxes. Given that MNEs often misuse transfer prices by setting prices that do not satisfy the arm's length principle to lower their tax liability, some studies refer to it as transfer mispricing (Bastin, 2014; Spencer, 2012), abusive transfer pricing (Schindler & Schjelderup, 2013; Wickham, 1991) or transfer price management (Jacob, 1996; Pendse, 2012).

The widely accepted definition of transfer pricing is presented below:

> "Transfer pricing" is the general term for the pricing of cross-border, intra-firm transactions between related parties. Transfer pricing therefore refers to the setting of prices [footnote removed] for transactions between associated enterprises involving the transfer of property or services. These transactions are also referred to as "'controlled" transactions, as distinct from "uncontrolled" transactions between companies that are not associated and can be assumed to operate independently ("on an arm's length basis") in setting terms for such transactions. (United Nations, 2013, p. 2)

Based on the above definition, transfer pricing appears to have a negative connotation: MNEs are likely to use it as a strategy to avoid income taxes by arranging the prices used for cross-border, intra-firm transactions.

The arm's length principle refers to prices used for transactions between independent or non-related parties. Tax convention models such as the Organisation for Economic Co-operation and Development (OECD)'s Model Tax Convention on Income and on Capital (OECD, 2017)—the OECD Model—and the United Nations Model Double Taxation Convention between Developed and Developing Countries (UN, 2017)—the UN Model—require MNEs to use the arm's length principle for pricing intra-firm transactions.

The arm's length principle treats the members of an MNE group "as separate entities rather than as inseparable parts of a single unified business" (OECD, 2009, p. 27) and it is "essentially an approximation of market-based pricing" (United Nations, 2013, p. iii). That is, the arm's length principle requires MNEs to use market prices for intra-firm transactions rather than arranging or managing the transfer prices to avoid income taxes in high-tax jurisdictions. However, in the real world, there are difficulties in applying the arm's length principle, especially in situations where the goods or services involved are unique and where market-based prices in transactions between independent parties are absent.

The second channel that MNEs use to shift profits is high debt financing, especially financing by loans from related parties. A company may deliberately finance its business activities by debt rather than by equity. For instance, companies may deliberately restructure their financing arrangements so that the finance is recognised as a debt or loan rather than as equity capital under the tax rules. This is often referred to as "thin capitalisation" in the tax literature. From a taxation point of view, the reason why MNEs tend to use loans to finance subsidiaries in high-tax countries is that debt financing (also known as leveraging or gearing) is more beneficial than equity financing because the payment of interest on debt is deductible for tax purposes, whereas the payment of dividends on equity is not.

Both FOICs and DOICs can use transfer pricing and debt financing as channels to shift profits between related parties. However, when DOICs shift profits between related parties, the group as a whole will likely end up with the same tax liability because the members of the group are taxed under Indonesian tax law. In contrast, an FOIC has incentives to shift profits out of Indonesia because the parent company and its affiliates are in different tax jurisdictions. For example, an FOIC that requires substantial capital to finance its operations, such as a mining FOIC, has incentives to be financed by intra-group debts from its parent company or an affiliate located in a low-tax jurisdiction. Accordingly, the interest expense paid on the intra-group debt by the FOIC will lead to higher tax benefits in Indonesia than the tax cost associated with the interest income in the low-tax country where the lender is located. Cross-border profit shifting out of Indonesia by foreign MNEs—either by transfer pricing or debt financing—can lower the total tax payable by the group as a whole.[7]

3.2. Review of Some Prior Studies and Development of Hypotheses

Some previous studies focus on transfer pricing arrangements, some focus on debt financing, and some examine both. This section presents three examples of studies that focus on transfer pricing. Bartelsman and Beetsma (2003) examine whether MNEs shifted profits among OECD countries during the period 1979–1997. Unlike earlier studies that examine income shifting from developed countries to low-tax jurisdictions, they focus on profit shifting by MNEs

[7] From a theoretical point of view, Indonesian affiliates of MNEs may also receive profit shifted from other affiliates in higher tax jurisdictions. However, as the corporate tax rate in Indonesia (28% in 2009 and 25% from 2010) is relatively high compared to many other countries, especially tax havens, it is doubtful that Indonesia may be chosen as a profit-shifting destination by MNEs.

among OECD countries and base their empirical analysis "solely on the manufacturing sector" (Bartelsman & Beetsma, 2003, p. 2246). They control "for the effects of taxes and unobserved productivity on the scale of real economic activity" by "regressing the ratio of total value added to wage payments on tax rate differences", and claim that this "novel method" can isolate "the pure effects of income shifting" (Bartelsman & Beetsma, 2003, p. 2226). They find significant tax-motivated transfer price arrangements by MNEs. Specifically, they find that a unilateral tax increase reduces the reported income tax base and estimate that "more than 65% of the additional revenue" expected from such a tax increase "is lost because of income shifting" (Bartelsman & Beetsma, 2003, p. 2246).

Bernard et al. (2006) study how MNEs based in the United States (U.S.) set prices that differ across related and unrelated party buyers. Using U.S. international trade transaction data provided by the U.S. Census Bureau and the U.S. Customs Bureau between 1992 and 2000, the authors find that U.S. exporters set substantially higher prices for their arm's length customers than for related parties. These differences exist even for transactions with the same characteristics (i.e., the same product, the same exporter, the same time of shipping, and the same shipment mode). Their findings suggest that U.S.-based MNEs have used transfer pricing arrangements as a channel for shifting profits out of the United States.

Using firm-level trade data for France in 2008, Vicard (2015) examines whether MNEs in France avoid French income tax by means of transfer pricing in trade with related parties, as well as the documents that the MNEs use "to manipulate their transfer prices to shift profits to affiliates located in low tax countries in order to reduce their tax expenses" (p. 3). He finds that if France has a corporate tax rate that is one percentage point higher than that of its trade partner, intra-firm export prices reduce by 0.22% and intra-firm import prices increase by 0.24%. Therefore, like the authors of the previous studies, he finds that French-based MNEs also use the transfer pricing strategy to shift profits.

The next three studies discussed investigate whether MNEs shift profits by means of debt financing. Mills and Newberry (2004) investigate how tax rate differences affect income reporting by MNEs and examine whether tax incentives affect the debt policies of foreign MNEs. They use two different measures of foreign tax incentives. First, they define tax incentives as the difference between the U.S. statutory corporate tax rate and the foreign MNE parent's effective tax rate. Secondly, they refer to tax incentives as the difference between the U.S. statutory corporate tax rate and the statutory corporate tax rate of the foreign MNE parent's home country. They find that the use of debts in U.S. affiliates is higher for foreign MNEs with lower foreign tax rates than for foreign MNEs with higher foreign tax rates for both measures of tax incentives, suggesting that MNEs finance their U.S. affiliates with higher debt only when the parent country of the U.S. affiliate has a lower income tax rate than that of the United States.

Huizinga et al. (2008) used firm-level data for European MNEs and their affiliates over the period 1994–2003 to examine whether an MNE's indebtedness in a country depends on tax rate differences. When considering an MNE "with two equal-sized establishments in two separate countries", an overall tax increase of 10% in one country increases "the leverage ratio in that country by 2.4%, while the leverage increase in the other country decreases by 10%" (Huizinga et al., 2008, p. 81). This finding suggests that European MNEs use high debt financing to shift profits out of high-tax host countries.

Buettner and Wamser (2013) also confirm that MNEs use debt financing to shift profits. Using panel data on German MNEs, they examine whether tax rate differences in 145 countries were used to facilitate internal debt financing by MNEs to shift profits to low-tax jurisdictions during 1996–2005. They observed that a foreign affiliate tends to use more internal debt financing if (1) the parent controls another affiliate that operates in a low-tax jurisdiction and (2) the tax rate difference between the foreign affiliate and the affiliate with the lowest tax rate within the group is significant. While the effect is small (partly, they find, because of the German-controlled foreign company rules), this result suggests that German MNEs shift profits out of high-tax countries by means of intra-group debt financing.

The studies mentioned above investigate the channels (either transfer pricing or debt financing) used by MNEs to shift profits by relying on the effect of tax rate differences. In a different study, Egger et al. (2010) examine both channels by comparing foreign-owned companies and domestic-owned companies. Specifically, they use data from 1999 to 2004 about more than 500,000 plants in 31 European countries to identify the causal effects of foreign ownership on profit tax savings. They argue that "by focusing on foreign-owned and comparable domestically-owned firms", they will "not only be able to estimate tax savings through foreign ownership as such but also identify" the important channels used by foreign-owned corporations to avoid income taxes (Egger et al., 2010, p. 100). They continue:

> Two such channels whose relative importance we will be able to explore are the (direct) shifting of profits from high-tax to low-tax countries (e.g., by transfer pricing, royalty and license fee payments, and other measures) and the (indirect) shifting of the tax base by shifting debt to countries where corporate tax rates are relatively high. (Egger et al., 2010, p.100)

They discover that "profit shifting through transfer pricing or royalty and license payments" is "relatively more important" than debt shifting in European economies (Egger et al., 2010, p. 106).

While all prior studies discussed in this section focus on channels used by MNEs to shift profits from the perspective of a developed country, cross-border profit shifting by means of transfer pricing and debt financing is also likely to occur in Indonesia—a developing country—for two reasons. First, FOICs have a competitive advantage over DOICs because, as explained in section 2.1, FOICs are affiliates of foreign MNEs and can, therefore, use the international network of affiliates (the internalisation factor) to avoid Indonesian CIT. Secondly, prior studies (e.g. Crivelli et al., 2015; Fuest & Riedel, 2010) find that developing countries also suffer as a result of profit shifting by MNEs. While these studies do not specifically investigate how MNEs shift profits out of developing countries, the findings appear to be plausible.

This study attempts to provide empirical evidence of the channels used by FOICs to shift profits out of Indonesia by comparing FOICs and DOICs. Specifically, it utilises two measures to detect the channels used by FOICs to shift profits out of Indonesia. First, earnings before interest and taxes (EBIT) to sales ratio (*EBIT/S*) is expected to capture profit shifting through transfer pricing arrangements. If foreign MNEs establish FOICs to artificially suppress selling prices, or to inflate purchase costs, management fees, rent or lease payments, or royalties or licence fees paid to affiliates overseas, their *EBIT/S* will be lower than those of comparable DOICs (comparable in terms of industry sector, firm size, and maturity). Thus, the lower *EBIT/S* of FOICs relative to comparable DOICs indicates the incidence of profit shifting by means of transfer mispricing of goods and services.

Secondly, long-term liability to related parties to total assets ratio (*LTL_RP/TA*) is expected to capture profit shifting through intra-group debt financing. The higher *LTL_RP/TA* of FOICs relative to comparable DOICs indicates the incidence of profit shifting by means of intra-group debt financing. Transfer pricing and debt financing can be complementary to, or a substitute for, each other as the channels to shift profits (Saunders-Scott, 2015).

Therefore, this study predicts a negative relation between *FOIC* (an indicator variable that takes the value of "1" if the Indonesian company is an FOIC and "0" for a DOIC) and *EBIT/S*, and a positive relation between *FOIC* and *LTL_RP/TA*. This leads to the two hypotheses stated in the alternative form as follows:

H1: FOICs report lower *EBIT/S* than comparable DOICs.
H2: FOICs report higher *LTL_RP/TA* than comparable DOICs.

4. RESEARCH DESIGN

4.1. Sample Selection and Period of Study

This study uses confidential corporate tax return data obtained from the DGT under a data nondisclosure agreement. However, the DGT only supplies tax return data for DOICs registered in the Jakarta tax offices. Given the variation in the quality of tax return data processed by the Jakarta tax offices and regional tax offices, this study only includes companies (FOICs and DOICs) registered with the Jakarta tax offices in order to ensure consistent data quality. This study uses data reported in company tax returns because, according to the OECD (2015), tax return data can capture the existence of profit shifting by MNEs more effectively than financial data. All firms in the current study have been anonymised by the DGT for privacy protection.

The time period for the study is 2009 to 2015. A key reason for starting the study from 2009 is related to the Indonesian tax administrative reform, better known as *modernisasi* (modernisation), which began in July 2002. Completed at the end of 2008, the reform claimed to have equipped Indonesian tax office units nationwide with "more efficient organizational structure, more simplified and transparent business process, adoption of the more advanced system and information technology, better human resources and improved good governance" (DGT, Ministry of Finance of the Republic of Indonesia, 2010, p. 38). As a result, tax return data from 2009 onwards is expected to be more reliable for research purposes. The reason for ending the period of study in 2015 is simply because this was the latest year for which the confidential tax return data was available from the DGT.

Table 1 presents the derivation of the final samples used in this study for the two dependent variables.

Table 1: Final Sample Size[8]

	EBIT/S	***LTL_RP/TA***
Number of firm-years between 2009 and 2015 with data available for PSM procedure	31,596	33,099
Number of firm-years between 2009 and 2015 in the matched sample available for paired *t*-tests and OLS regressions	5,272	7,458
Consisting of:		
FOICs	2,636	3,729
DOICs	2,636	3,729

Notes: PSM: Propensity score matching. OLS: Ordinary least squares. FOICs: Foreign-owned Indonesian companies. DOICs: Domestic-owned Indonesian companies.

4.2. Measurement of Variables and Statistical Procedures

This study examines whether FOICs use transfer pricing and debt financing to shift profits out of Indonesia by comparing their profitability and the extent of intra-group debt financing with those of comparable DOICs. Following Egger et al. (2010), it examines foreign-owned companies (the treatment group) and comparable domestic-owned companies (the control group) in order to identify the channels used to shift profits. This is done in three stages, as outlined below.

Stage 1 – Regression models without matching

In the first stage, OLS regressions are used to investigate whether FOICs reported significantly lower *EBIT/S* and significantly higher *LTL_RP* than DOICs. More precisely, the two profit-shifting channel indicators used in this study are:

1. *EBIT/S* (earnings before interest and taxes scaled by total sales) to detect profit shifting by transfer pricing. The difference between the *EBIT/S* of FOICs and DOICs captures suppressed selling prices, inflated purchase prices, and inflated rent, royalties and management fees paid to associates overseas.

2. *LTR_RP/TA* (long-term liabilities to related parties scaled by total assets) to detect profit shifting by intra-group debt financing.

Equations (1) and (2) are the two OLS regression models used to analyse the differences between FOICs and comparable DOICs in terms of the two intra-group profit-shifting indicators:

[8] For EBIT/S model, the authors consider observations with EBIT/S < -1 and EBIT/S > 1 outliers. As for LTL_RP/TA model, the authors consider observations with LTL_RP/TA < 0 and LTL_RP/TA > 1 outliers.

$$EBIT/S_{it} = \beta_0 + \beta_1 FOIC_{it} + \beta_2 \ln Sales_{it} + \beta_3 Age_{it} + \beta_{4-76} Industry_{it} + \beta_{77-82} Year_t + \varepsilon_{it} \quad (1)$$

$$LTL\_RP/TA_{it} = \beta_0 + \beta_1 FOIC_{it} + \beta_2 \ln Sales_{it} + \beta_3 CapInt_{it} + \beta_4 Age_{it} + \beta_{5-77} Industry_{it} + \beta_{78-83} Year_t + \varepsilon_{it} \quad (2)$$

where:

$EBIT/S_{it}$ is earnings before interest and taxes divided by sales for firm *i* and year *t*;

LTL_RP/TA_{it} is long-term liability to related parties divided by total assets for firm *i* and year *t*;

$FOIC$ is a dummy variable that equals 1 if the company in the sample is an FOIC, or 0 if the company in the sample is a DOIC;

$\ln Sales_{it}$ is the natural logarithm of total sales for firm *i* in year *t*;

$CapInt_{it}$ is capital intensity, measured by net property, plant, and equipment scaled by total assets for firm *i* and year *t*;

Age_{it} is the number of years the company has been registered in an Indonesian tax office for firm *i* and year *t*;

$Industry_{it}$ is a set of dummy variables indicating the DGT industry classification of firm *i* and year *t*;

$Year_t$ is a set of six dummy variables that is expected to account for yearly fluctuations in *EBIT/S* or *LTL_RP/TA* (the dependent variable) that were not explained by *FOIC* (the independent variable) and any of the above control variables;

ε_i is the error term.

Equations (1) and (2) control for firm size by using total sales as a proxy. Total sales are in a natural logarithmic form (ln*Sales*) to transform total sales that are likely skewed into a more approximately normal variable. An advantage of using sales rather than assets as a proxy for firm size is that sales might capture firm size better than assets for companies that have large sales but only a small amount of assets. Firm size effects reported in the literature are inconsistent.[9] Therefore, following prior studies (e.g. Mills & Newberry, 2004), no sign is predicted for ln*Sales*.

Another control variable, *Age*, represents the number of years between a taxpayer's registration with a tax office in Indonesia and the lodging of their first tax return for the respective year in the study period. Previous studies (e.g. Grubert, 1998) provide evidence of the so-called maturation effect, which theorises that mature companies report higher levels of income. Accordingly, this study predicts a positive relationship between *EBIT/S* and *Age*, but does not predict any relationship between *LTL_RP/TA* and *Age*.

Equations (1) and (2) also control for *Industry* and *Year*. *Industry* is a series of indicator variables to control for industry effects. This study uses the two-digit industry classifications for Indonesian taxpayers set by the DGT. The *Year* dummy variables are included to provide a control for yearly variations in the magnitude of *EBIT* and *LTL_RP* reported by company taxpayers due to factors other than *FOIC* and the other control variables, such as macroeconomic conditions, that may differ from year to year.

This study follows prior studies (e.g. Myers, 1977) and includes capital intensity (*CapInt*) as a control variable when examining whether FOICs shift profits by means of intra-group debt financing in Equation (2). As explained by Mills and Newberry (2004), "capital structure theory suggests that debt usage is higher when firms have more assets–in–place (capital intensity)" (p. 98). Like prior studies, this study predicts a positive sign of the coefficient of *CapInt*.

A company is defined as an FOIC if more than 50% of its equity is held by non-residents for tax purposes. Conversely, a company in which the majority shares are owned by Indonesian residents for tax purposes is defined as a DOIC. Consistent with hypotheses H1 and H2, the coefficients of *FOIC* for the *EBIT/S* and *LTL_RP/TA* models are predicted to be negative and positive respectively.

Stage 2 – Propensity score matching

In the second stage, the PSM technique is used to ensure that FOICs and DOICs are comparable in terms of firm size (proxied by ln*Sales*), maturity (proxied by *Age*), industry (using the DGT two-digit industry classification) and year. For the debt financing model, in addition to the four variables mentioned above, this study also includes capital intensity (*CapInt*, proxied by net property, plant, and equipment (PPE) scaled by total assets) as one of the matching criteria. Using the above matching criteria as the independent variables to compute the propensity scores, an FOIC is matched to a DOIC with the nearest propensity score for comparison. This study follows the PSM procedure presented below (using the Stata statistical package with the add-on procedures of *pstest* and *psmatch2*) to match an FOIC to a DOIC before running paired *t*-tests and OLS regressions again:

[9] Using the inverse sales as the size variable, Grubert et al. (1993) find that size is sometimes significant in their taxable income to asset regressions. On the other hand, Mills and Newberry (2004) find insignificant results for their size variable, which is proxied by total sales divided by worldwide sales.

1. Run a regression with *EBIT/S* (*LTL_RP/TA*) as the dependent variable, and *FOIC*, ln*Sales*, *Age*, and *Industry* indicators, as well as *Year* indicators (and *CapInt* when *LTL_RP/TA* is the dependent variable) as independent variables to set the e(sample).

2. Use *pstest* to test the differences in means between the independent variables across the treatment group (FOICs) and the control group (DOICs) before matching.

3. Use *psmatch2* and logit regression to compute propensity scores using *FOIC* as the dependent variable, ln*Sales*, *Age*, *Industry* indicators, *Year* indicators (and *CapInt* for the *LTL_RP/TA* model) as the independent variables, and match each FOIC to the DOIC with the nearest propensity score, without replacement.

4. Use *pstest* to test the differences in terms of firm size, age (and capital intensity) between FOICs and the matched DOICs. If there is any significant difference between the two groups, specify a caliper (see Step 5).

5. Set a caliper initially as 0.25 of the standard deviation of the generated propensity scores.

6. Run *psmatch2* to match treatment firms to their nearest neighbour control firms subject to the requirement that the propensity scores of the matched pairs are within the specified caliper, without replacement.

7. Use *pstest* again to examine whether any significant differences remain in terms of firm size, age (and capital intensity) between the two groups. If so, reduce the caliper and repeat step 6 until no significant differences in terms of firm size, age (and capital intensity) are found between the two groups.

8. Run paired *t*-tests and the OLS regressions on the propensity score-matched sample.

The matched samples obtained from the PSM techniques ensure that the FOICs and the DOICs are comparable in firm size, maturity, capital intensity, industry affiliation, and year. Paired *t*-tests are run to examine whether the two groups (FOICs and the matched DOICs) are significantly different from each other in terms of the two outcome variables, *EBIT/S* and *LTL_RP/TA*. OLS regression models, as represented by equations (1) and (2), are run again on the matched sample to further investigate the channels used by FOICs to avoid Indonesian CIT. The current study runs all regressions by clustering the errors by firms to allow for heteroscedasticity and autocorrelation within a firm. A set of *Year* dummy variables is also included to capture some of the yearly variations that have not been captured by *FOIC* and the control variables. Panel data analyses (e.g. a fixed effects model) are not appropriate for the current study. The main reason is simply because *FOIC*—the test variable—is an indicator variable (i.e. equals 1 if the firm is a FOIC and 0 otherwise) and therefore does not vary across years for a firm.

Stage 3 – Coarsened exact matching

PSM has been extensively used since it was introduced in a seminal paper written by Rosenbaum and Rubin (1983), mainly due to its superiority when creating a simple and direct comparison of baseline covariates between treated and controlled observations. However, there has been debate about the validity of the PSM method. The debate has intensified in recent years, largely due to King and Nielsen (2019) who observe that PSM "often accomplishes the opposite of its intended goal—thus increasing imbalance, inefficiency, model dependence, and bias" (p. 435).

Therefore, the current study uses coarsened exact matching (CEM) as an alternative matching method to check whether the PSM produces consistent results. CEM improves the estimation of causal effects by reducing imbalance in treated and control group covariates (Blackwell et al., 2009). CEM generates strata and uses weights to offset different strata sizes between treated and control units. An option for not using weights—known as the k-to-k option—is available for users with enough data. It prunes observations within each stratum "until the solution contains the same number of treated and control units within all strata" (Blackwell et al., 2009, p. 536). The current study runs regressions using both the CEM weighted sample and the CEM k-to-k sample, but only reports the results of the CEM weighted sample because the results of the k-to-k sample are similar.

5. EMPIRICAL RESULTS

5.1. Summary Statistics

Table 2 shows the descriptive statistics of the key variables for the *EBIT/S* and *LTL_RP/TA* models in Panels A and B respectively after the propensity score matching PSM procedure.

Panel A shows that *EBIT/S* has a mean of 0.068, suggesting that, on average, companies in the sample report an EBIT of 6.8% of their total sales. After PSM, the matched sample of FOICs has a mean *EBIT/S* of 5.4%, which is lower than the mean *EBIT/S* of 8.1% of the matched sample of DOICS, consistent with profit shifting using transfer pricing. The mean of ln*Sales* is 24.9, indicating that, on average, the companies in the final sample have annual sales of around Rp65 billion, which is equivalent to approximately USD4.8 million using the 31 December 2015 exchange rate for tax purposes (i.e. $1 = Rp13,640). After PSM, the matched FOICs and DOICs have very similar firm sizes as measured by ln*Sales*. The average *Age* is 12 years, indicating that, on average, companies in the sample are relatively mature. After PSM, the matched FOICs and DOICs are very similar in terms of maturity, as measured by *Age*.

From Panel B, *LTL_RP/TA* has a mean of 0.027, suggesting that, on average, companies in the sample recorded long-term liability to related parties of 2.7% of their total assets. After PSM, the matched sample of FOICs has a mean *LTL_RP/TA* of 3.2%, which is higher than the mean *LTL_RP/TA* of 2.2% of the matched sample of DOICs, consistent with profit shifting using related-party debt financing. The mean of ln*Sales* is 25.1, similar to that of the *EBIT/S* model. In terms of the age of companies, the final sample in the *LTL_RP/TA* model shows a similar level of maturity as that of the *EBIT/S* model. The mean of *CapInt* is 0.25, indicating that, on average, companies in the sample have 25% of their assets in the form of net PPE. After PSM, ln*Sales*, *CapInt*, and *Age* are very similar for the matched FOICs and DOICs.

Table 2: Descriptive Statistics After Propensity Score Matching Procedure

A. *EBIT/S* Model

Variable	All Obs No.	All Obs Mean (Std Dev)	FOICs No.	FOICs Mean (Std Dev)	DOICs No.	DOICs Mean (Std Dev)
EBIT/S	5,272		2,636		2,636	
		0.068		0.054		0.081
		(0.208)		(0.216)		(0.199)
ln*Sales*	5,272		2,636		2,636	
		24.902		24.886		24.919
		(2.130)		(2.271)		(1.978)
Age	5,272		2,636		2,636	
		12.231		12.158		12.304
		(8.436)		(8.866)		(7.983)

B. *LTL_RP/TA Model*

Variable	All Obs No.	All Obs Mean (Std Dev)	FOICs No.	FOICs Mean (Std Dev)	DOICs No.	DOICs Mean (Std Dev)
LTL_RP/TA	7,458					
		0.027	3,729	0.032	3,729	0.022
		(0.115)		(0.126)		(0.102)
ln*Sales*	7,458					
		25.074	3,729	25.083	3,729	25.066
		(2.258)		(2.472)		(2.021)
CapInt	7,458					
		0.254	3,729	0.251	3,729	0.257
		(0.230)		(0.225)		(0.235)
Age	7,458					
		13.353	3,729	13.234	3,729	13.472
		(8.572)		(8.999)		(8.121)

Notes: FOICs: Foreign-owned Indonesian companies. DOICs: Domestic-owned Indonesian companies.

Table 3 shows the Pearson correlation between the main variables in this study after PSM.

Table 3: Pearson Correlation Matrix After Propensity Score Matching Procedure

A. EBIT/S

	FOIC	***EBIT/S***	**ln*Sales***	***Age***
FOIC	1			
EBIT/S	−0.065 ***	1		
ln*Sales*	−0.008	0.132 ***	1	
Age	−0.009	0.088 ***	0.331 ***	1

B. LTL_RP/TA

	FOIC	*LTL_RP/TA*	ln*Sales*	*CapInt*	*Age*
FOIC	1				
LTL_RP/TA	0.043 ***	1			
ln*Sales*	0.004	0.008	1		
CapInt	−0.013	0.122 ***	0.133 ***	1	
Age	−0.014	−0.035 ***	0.321 ***	0.044 ***	1

Note: ***, **, and * indicate significance at 1%, 5%, and 10% levels respectively in a two-tailed test. FOIC: Foreign-owned Indonesian company.

FOICs are negatively (positively) correlated with *EBIT/S* (*LTL_RP/TA*) and are significant at the 1% level, which is consistent with the prediction. Firm size is positively correlated with *EBIT/S* but is not significantly correlated with *LTL_RP/TA*. *Age* has a significantly positive (negative) correlation with *EBIT/S* (*LTL_RP/TA*). As predicted, capital intensity is positively correlated with long-term liabilities to related parties.

A test of collinearity is run to calculate the variance inflation factor (VIF) for each variable to examine whether any one of the regressors is a perfect linear function of another regressor. The VIFs are in the range of 1.01 to 3.59 and 1.01 to 4.14 for the *EBIT/S* and *LTL_RP/TA* models respectively. The VIFs are lower than the general tolerance value of 10, indicating the absence of collinearity issue in both models.

5.2. Results of Statistical Analyses

Using equations,

$$EBIT/S_{it} = \beta_0 + \beta_1 FOIC_{it} + \beta_2 \ln Sales_{it} + \beta_3 Age_{it} + \beta_{4-76} Industry_{it} + \beta_{77-82} Year_t + \varepsilon_{it}$$

and

$$LTL\_RP/TA_{it} = \beta_0 + \beta_1 FOIC_{it} + \beta_2 \ln Sales_{it} + \beta_3 CapInt_{it} + \beta_4 Age_{it} + \beta_{5-77} Industry_{it} + \beta_{78-83} Year_t + \varepsilon_{it},$$

Table 4 shows the key regression results for the two stage 1 profit-shifting indicators (i.e. using the available dataset before matching an FOIC with a DOIC).

Table 4: Results of Regression Estimations Without Any Matching Procedure

	Expected sign		**Dependent variable: *EBIT/S***	**Dependent variable: *LTL_RP/TA***
FOIC	− | +		−0.044 ***	0.016 ***
			(−7.60)	(4.63)
ln*Sales*	|		0.010 ***	−0.001
			(7.87)	(−1.36)
CapInt	| +			0.040 ***
				(7.24)
Age	+ |		0.000	−0.000 *
			(1.43)	(−1.65)
Industry#	? | ?		Yes	Yes
Year	? | ?			
2010			0.001	0.000
			(0.37)	(0.24)
2011			−0.011 ***	−0.003
			(−3.30)	(−1.58)
2012			−0.013 ***	−0.002
			(−3.86)	(−1.17)
2013			−0.021 ***	−0.003 *
			(−4.86)	(−1.80)
2014			−0.015 ***	−0.003 *
			(−3.70)	(−1.93)
2015			−0.047 ***	−0.003 *
			(−10.67)	(−1.81)
Constant			−0.127	0.050
			(−3.43)	(4.15)
R^2			0.243	0.042
n			31,596	33,099

Notes: *t*-statistics appear in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels respectively in a two-tailed test. The regression results for the industry dummy variables are not reported for conciseness. FOIC: Foreign-owned Indonesian company.

The results show that FOICs report *EBIT/S* of around 4.4 percentage points lower and *LTL_RP/TA* of 1.6 percentage points higher than those of DOICs. The directions of both coefficients are consistent with the prediction and are significant at the 1% level, supporting both hypotheses H1 and H2.

The coefficient for ln*Sales* is positively significant at the 1% level in the *EBIT/S* regression model but is insignificant in the *LTL_RP/TA* regression model, suggesting that firm size is significantly associated with profitability, but not long-term liability to related parties.

The coefficient for *CapInt* is positive and significant at the 1% level, suggesting that the more capital intensive the company, the higher the level of long-term borrowings from related parties.

The coefficient for *Age* is insignificant in the *EBIT/S* regression model and only significant at the 10% level in the *LTL_RP/TA* regression model, indicating that the maturity level of the companies is not associated with the magnitude of the profitability that they report and the level of long-term borrowings from related parties.

The coefficients of *Year* for the *EBIT/S* model suggest that Indonesian companies reported significantly less earnings before interest and tax for 2011 to 2015 than in 2009. The magnitude of the gaps between 2009 and later years show an increasing trend except in 2014. The coefficients of *Year* for the *LTL_RP/TA* model do not show a similar pattern.

Before the matching procedure, FOICs may concentrate in some industries, while DOICs may concentrate in other industries. Different industries may have different *EBIT/S* and different levels of capital intensity, hence different degrees of reliance on debt. Also, FOICs and DOICs may differ in terms of firm size and age. Although the regression models before the matching procedure control for the effects of industry, firm size, age, and year, the coefficients for *FOIC* in the two regression models may still be unreliable. Therefore, in stage 2, the PSM procedure described earlier is carried out to match an FOIC with a DOIC in order to derive a final sample of FOICs and DOICs that are comparable in terms of industry, firm size, age, year (for both models), and capital intensity (for the *LTL_RP/TA* model only) before paired *t*-tests and further regression analyses are conducted.

Table 5 presents the key results of stage 2 (i.e. after PSM) using the paired *t*-tests for both the *EBIT/S* and *LTL_RP/TA* models.

Table 5: Results of Paired t-tests After Propensity Score Matching Procedure

	Expected Sign	**Dependent variable:** ***EBIT/S***		**Dependent variable:** ***LTL_RP/TA***	
ATE—*FOIC* (1 vs 0)	− | +	−0.022	***	0.009	***
n: FOICs (treatment)		2,636		3,729	
n: DOICs (control)		2,636		3,729	

Notes: ***, **, and * indicate significance at the 1%, 5%, and 10% levels respectively in a two-tailed test. ATE is the average treatment effect. FOICs: Foreign-owned Indonesian companies. DOICs: Domestic-owned Indonesian companies.

The paired *t*-tests compare 2,636 FOICs with 2,636 matched DOICs and show that, on average, FOICs report lower *EBIT/S* by 2.2 percentage points, which is consistent with hypothesis H1. The result of the paired *t*-test for *LTL_RP/TA* also confirms that FOICs report nearly one percentage point higher long-term liabilities to related parties after comparing 3,729 FOICs with 3,729 matched DOICs, which is consistent with hypothesis H2. Both results are significant at the 1% level.

Table 6 presents the key results of the OLS regressions for both the *EBIT/S* and *LTL_RP/TA* models after PSM using the following equations:

$$EBIT/S_{it} = \beta_0 + \beta_1 FOIC_{it} + \beta_2 \ln Sales_{it} + \beta_3 Age_{it} + \beta_{4-53} Industry_{it} + \beta_{54-59} Year_t + \varepsilon_{it}$$

and

$$LTL\_RP/TA_{it} = \beta_0 + \beta_1 FOIC_{it} + \beta_2 \ln Sales_{it} + \beta_2 CapInt_{it} + \beta_4 Age_{it} + \beta_{5-61} Industry_{it} + \beta_{62-67} Year_t + \varepsilon_{it}$$

The coefficients for *FOIC* before and after the PSM procedure are consistent. After the matching procedure, the coefficients indicate that, on average, FOICs report *EBIT/S* of around 2.7 percentage points lower, and *LTL_RP/TA* of nearly one percentage point higher, than those of their matched DOICs. The negative relationship between *FOIC* and *EBIT/S*, and the positive relationship between *FOIC* and *LTL_RP/TA*, indicate that FOICs use both transfer pricing and debt financing strategies to shift profits out of Indonesia, which is consistent with the hypotheses and the results of the stage 1 regressions.

The coefficient of *FOIC* in the *EBIT/S* model shows that, on average, FOICs report lower *EBIT/S* by 2.7 percentage points after controlling for ln*Sales*, *Age*, *Industry* and *Year*, supporting hypothesis H1. The coefficient of *FOIC* in the *LTL_RP/TA* model also confirms that FOICs report nearly one percentage point higher long-term liabilities to related parties, supporting hypothesis H2. The coefficients of *FOIC* are significant at the 1% and 5% levels respectively for the EBIT/S and LTL_RP/TA models.

The coefficient for ln*Sales* is positively significant at the 1% level in the *EBIT/S* regression model but is insignificant in the *LTL_RP/TA* regression model, suggesting that firm size is significantly associated with profitability, but not long-term liability to related parties.

The coefficient for *CapInt* is positive and significant at the 1% level, which is consistent with the prediction that the more capital intensive the company, the higher the level of long-term borrowings from related parties.

As predicted, the coefficient for *Age* is positive and significant at the 1% level in the *EBIT/S* regression model, indicating that more mature companies tend to report higher profitability. The coefficient for *Age* is insignificant in the *LTL_RP/TA* regression model, suggesting that the level of maturity is not associated with the level of long-term borrowing from related parties.

Finally, the coefficients of *Year* for the *EBIT/S* model suggest that Indonesian companies reported less earnings before interest and taxes in later years than in 2009, and the gaps between 2009 and the later years show an increasing trend except in 2013. The coefficients of *Year* for the *LTL_RP/TA* model do not show a similar pattern.

Table 6: Results of Regression Estimations Without Any Matching Procedure

	Expected Sign			**Dependent variable:** ***EBIT/S***		**Dependent variable:** ***LTL_RP/TA***	
FOIC	−	|	+	−0.027	***	0.009	**
				(−3.85)		(2.27)	
ln*Sales*		|		0.012	***	0.000	
				(4.97)		(0.41)	
CapInt		|	+			0.054	***
						(4.99)	
Age	+	|		0.002	***	−0.000	
				(3.16)		(−1.48)	
Industry#	?	|	?	Yes		Yes	
Year	?	|	?	−0.020		−0.002	
2010				(−2.23)	**	(−0.52)	
2011				−0.024	***	−0.003	
				(−2.91)		(−0.69)	
2012				−0.027	***	−0.004	
				(−2.91)		(−0.93)	
2013				−0.023	**	−0.005	
				(−2.29)		(−0.94)	
2014				−0.031	***	−0.005	
				(−3.23)		(−1.06)	
2015				−0.062	***	−0.004	
				(−5.92)		(−0.86)	
Constant				−0.184		0.047	
				(−2.76)		(1.72)	
R^2				0.085		0.050	
n				5,272		7,458	

Notes: *t*-statistics appear in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels respectively in a two-tailed test. The regression results for the industry dummy variables are not reported for conciseness. FOICs: Foreign-owned Indonesian companies. DOICs: Domestic-owned Indonesian companies.

Table 7 presents the key results of the OLS regressions for both the *EBIT/S* and *LTL_RP/TA* models after the coarsened exact matching procedure.[10] We used the following equations:

$$\frac{EBIT}{S}_{it} = \beta_0 + \beta_1 FOIC_{it} + \beta_2 \ln Sales_{it} + \beta_3 Age_{it} + \beta_{4-53} Industry_{it} + \beta_{54-59} Year_t + \varepsilon_{it}$$

and

$$LTL\_RP/TA_{it} = \beta_0 + \beta_1 FOIC_{it} + \beta_2 \ln Sales_{it} + \beta_2 CapInt_{it} + \beta_4 Age_{it} + \beta_{5-61} Industry_{it} + \beta_{62-67} Year_t + \varepsilon_{it}.$$

The coefficients of *FOIC* after the CEM procedure are consistent with those before and after the PSM procedures. After the CEM, the coefficients of *FOIC* indicate that, on average, FOICs

[10] The results reported in Table 7 are those of regression using the CEM weighted sample. The results of regression using the CEM sample with the k-to-k option are similar, so are omitted here to save space.

report *EBIT/S* of 2.3 percentage points lower, and *LTL_RP/TA* of 1.6 percentage point higher, than those of the matched DOICs. The coefficients of *FOIC* are statistically significant at the 0.01 level in both models. As the key results in stages 2 and 3 are consistent and support both hypotheses H1 and H2, FOICs appear to use both transfer pricing and debt financing strategies to shift profits out of Indonesia. The consistent results of PSM and CEM enhance the credibility of these matching methods and the empirical findings.

Table 7: Results of Regression Estimations After Coarsened Exact Matching Procedure

	Expected Sign			**Dependent variable:** ***EBIT/S***		**Dependent variable:** ***LTL_RP/TA***	
FOIC	−	|	+	-0.023 (-5.21)	***	0.016 (5.32)	***
ln*Sales*		|		0.014 (12.27)	***	0.001 (0.98)	
CapInt		|	+			0.010 (1.03)	
Age	+	|		0.001 (2.10)	**	-0.001 (-3.53)	***
Industry#	?	|	?	Yes		Yes	
Year 2010	?	|	?	-0.010 (-1.47)		-0.013 (-2.38)	**
2011				-0.022 (-3.19)	***	-0.007 (-1.36)	
2012				0.004 (0.64)		-0.011 (-1.97)	**
2013				0.001 (0.20)		-0.018 (-3.39)	***
2014				-0.005 (-0.66)		-0.007 (-1.37)	
2015				-0.080 (-11.93)	***	-0.000 (-0.03)	
Constant				-0.216 (-7.02)		0.042 (1.89)	
R^2				0.117		0.048	
n				14,136		5,119	

Notes: *t*-statistics appear in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels respectively in a two-tailed test. The regression results for the industry dummy variables are not reported for conciseness. FOICs: Foreign-owned Indonesian companies. DOICs: Domestic-owned Indonesian companies.

5.3. Additional Analyses

An FOIC can shift profit to its immediate parent, ultimate parent, or any overseas affiliate in the MNE group that has a tax rate lower than that of the FOIC in Indonesia. Therefore, even if the immediate parent has a tax rate higher than the FOIC's Indonesian tax rate, the FOIC can

still shift profit to another overseas affiliate with a lower tax rate. Nonetheless, dividing the FOIC's sample into a subsample where its parent's tax rate is *lower* than the FOIC's Indonesian tax rate, and another subsample where its parent's tax rate is *higher* than the FOIC's Indonesian tax rate may provide additional insights.

Table 8: EBIT/S Ratio: FOICs Versus DOICs

	Regression *without* PSM		Regression *after* PSM		Paired *t*-test *after* PSM	
	Coef. of *FOIC*	Std. Dev.	Coef. of *FOIC*	Std. Dev.	Mean Diff.	Std. Dev.
All FOICs with valid EBIT/S	-0.044***	0.0057	-0.027***	0.0071	-0.022***	0.0067
FOICs with parent's tax rate *lower* than FOIC's	-0.058***	0.0079	-0.054***	0.0095	-0.056***	0.0094
FOICs with parent's tax rate *higher* than FOIC's	-0.022***	0.0076	-0.020**	0.0084	-0.024***	0.0081

Note: ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels respectively in a two-tailed test. FOICs: Foreign-owned Indonesian companies. DOICs: Domestic-owned Indonesian companies.

Transfer pricing involves the trading of goods and services, so this channel is more likely to be used when a FOIC's immediate parent has a *lower* tax rate than the FOIC. Therefore, in Table 8 (above), the difference between the EBIT to sales ratios of FOICs and DOICs are much larger in cases of parents with lower tax rates than in those of parents with higher tax rates. However, even in cases where parents are subject to higher tax rates, profit shifting out of Indonesia still occurs because FOICs can shift profits to other lower tax affiliates using transfer pricing, as evidenced by the statistically significant difference between the EBIT-to-sales ratios of FOICs and DOICs.

Table 9: LTD_RP/TA Ratio: FOICs Versus DOICs

	Regression *without* PSM		Regression *after* PSM		Paired *t*-test *after* PSM	
	Coef. of *FOIC*	Std. Dev.	Coef. of *FOIC*	Std. Dev.	Mean Diff.	Std. Dev.
All FOICs with valid LTD_RP/TA	0.016***	0.0035	0.009**	0.0041	0.009***	0.0029
FOICs with parent's tax rate *lower* than FOIC's	0.015***	0.0050	0.011	0.0068	0.008	0.0052
FOICs with parent's tax rate *higher* than FOIC's	0.015***	0.0044	0.013***	0.0047	0.011**	0.0044

Note: ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels respectively in a two-tailed test. FOICs: Foreign-owned Indonesian companies.

Related party debt finance can be provided by any affiliate in a low tax country, whether or not the affiliate is carrying on an active business that involves the trading of goods and services. Therefore, in Table 9, when the immediate parent has a *higher* tax rate than the FOIC, related party debt financing is more likely to be used than transfer pricing to shift profit to a low-tax affiliate. On the other hand, when the immediate parent has a *lower* tax rate than the FOIC, transfer pricing is more likely to be used to shift profit to the parent company, so the difference in *LTD_RP/TA* between FOICs and DOICs becomes insignificant after PSM.

For both ratios, the results of the full sample and subsamples are consistent with profit shifting out of Indonesia.

6. CONCLUSION

This article examines the incidence of profit shifting in a developing country by analysing corporate tax return data obtained from the Indonesian tax authority. The empirical findings corroborate prior studies' findings that developing countries may suffer from profit-shifting strategies adopted by MNEs. Therefore, this article is expected to contribute to knowledge about international tax avoidance.

This study fills a gap in the base erosion and profit shifting (BEPS) literature in the following ways. First, it is one of the earliest studies to use firm-level data to examine the profit-shifting channels used by foreign MNEs in a developing economy. Secondly, it uses confidential Indonesian tax return data supplied by the DGT. The OECD (2015) states that tax return data can provide more reliable information about the incidence of BEPS. By using tax return data, the findings of this study are expected to provide more reliable results and facilitate a deeper understanding of the BEPS issue, especially from the perspective of a developing country. Thirdly, this study is arguably the first study to use domestic-owned companies as a counterfactual to identify profit shifting by foreign-owned companies in a developing country. Finally, this study uses two alternative matching methods, PSM and CEM, to match the two groups of companies to identify profit shifting through two channels: transfer pricing and related party debt financing. The fact that the two matching methods produce consistent key results enhances the credibility of these methods and the empirical findings.

In recent years, the Indonesian government has been trying to keep pace with tax avoidance activities in the rapidly developing business environment by making some progressive changes. For example, it recently introduced the Minister of Finance regulation number 22/PMK.03/2020, which details the procedures for advance pricing agreements. This states that the DGT has the authority to determine the transfer price used by taxpayers if they do not meet the arm's length principle as stipulated in the regulation. The regulation came into effect on 18 March 2020 and is, therefore, an important development that occurred subsequent to the period of study covered in this article. Future research is needed to further examine whether profit-shifting activities in Indonesia have declined following the implementation of the new regulation.

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