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Digitalization and Tax-Motivated Income Shifting

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Abstract. Numerous studies show that the tax rate difference between parent and subsidiaries as well as among subsidiaries acts as the incentive for income shifting between multinational corporations (MNCs). Digital business models that emerged as an impact of digital transformation may exacerbate income shifting by MNCs. However, empirical studies to support the relation between digital business models and income shifting is still scarce. Thus, this study examined whether Indonesia's foreign-owned manufacturing companies shift income in respect to its foreign-parent tax rate and if the level of digitalization exacerbates the practice. This study used the income-shifting approach by Hines and Rice (1994) modified by Purba (2018) extended with the level of digitalization which is intangible asset intensity. Using a panel data regression model of public-listed manufacturing companies from 2011 to 2019, this study found no evidence of income shifting between foreign-owned Indonesian companies with its parent overseas. Moreover, using moderated regression analysis, this research found that the level of digitalization did not strengthen the influence of tax rate to income shifting. Thus, it concluded that digitalization did not influence income shifting practice. While the results were inconsistent, it did not rule out the possibility of income shifting between affiliates in a group and/or the utilization of other channels of income shifting such as debt and transfer pricing. Furthermore, this study may initiate future studies in the relationship between income shifting and digitalization by employing different measurement or expanding the research's samples.

Keywords: income shifting, level of digitalization, foreign-owned Indonesian companies, intangible asset intensity

INTRODUCTION

The practice of income shifting may eliminate the prospect of state revenues. For example, the income shifting practice was conducted by Microsoft which is located in the US but registers its software licenses in Europe, Africa, and the Middle East. This practice succeeded in saving up to US$500 million in taxes each year. The Microsoft parent company located in the US received royalty payments which are subject to low corporate income tax rate in Ireland and deductible in high tax rate jurisdictions (Mutti and Grubert, 2009). Furthermore, Mutti and Grubert (2009) stated that a similar strategy was also implemented by other technology companies to reduce the overall tax burden. Six companies which are Facebook, Apple, Amazon, Netflix, Google, and Microsoft paid much lower tax than generally understood for the period of 2010-2019 . Facebook had the lowest percentage of cash tax paid to profits of 10.2% in the time when the US headline tax rate was 35%. Similar practices also occurred in Indonesia. The Google office in Indonesia receives Rp11.6 trillion from its advertising revenue. However, the revenues from Indonesia were transferred to Google Asia-Pacific office, the Google Asia Pacific Pte. Ltd. which is located in Singapore which imposes a relatively low corporate income tax rate of 17%.

From these cases, it may be understood that the tax rate difference between parent and subsidiaries as well as among subsidiaries acts as the incentive for income shifting between multinational corporations (MNCs) (Hines and Rice, 1994; Huizinga and Laeven, 2008; Dharmapala, 2014a; McGuire et al, 2017; Purba, 2018; Amberger et al, 2020). Numerous studies showed that taxable profits in a country are sensitive to tax rates which are confirmed by an inverse relationship between reported profits of parents or affiliates and local tax levels (Heckemeyer and Overesch, 2013).

Progressively, research on income shifting began to include elements of digitalization. Klein et al (2020) examined if digital infrastructure improved decision making in tax planning decisions of European companies using income-shifting approach by Hines and Rice (1994) expanded by Huizinga and Laeven (2008) with an IT sophistication index (IT index). They found that firms with higher IT index respond more efficiently to the income shifting incentive than non-digital firms. Klassen and Lapante (2013) developed an indicator variable called HighEComm that is equal to one for firms in industry-years with levels of

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e-commerce sales in the top third of the sample, and zero otherwise. The findings are consistent with the predictions that firms in industries with high levels of e-commerce have lower cash effective tax rates, which shows that they have lower ratio of cash taxes paid to pre-tax income. Amberger et al (2020), who also modified the income-shifting approach by Hines and Rice (1994), examined the relationship between patent concentration and tax-motivated income shifting. They found that tax-motivated income shifting increased based on the degree of patent concentration.

Digitalization is inevitable for businesses. It is crucial because it allows companies to automate most of their production, achieve higher and more stable output quality at lower marginal cost, operate supply chains with high complexity, maintain close relationships with customers, and adjust real-time production based on market demands (OECD, 2019). It is also known as "Industry 4.0" in Europe, "Society 5.0" in Japan, "Industrial Internet" in America, and "Making Indonesia 4.0" in Indonesia.

The Covid-19 pandemic which triggered economic crises worldwide had encouraged not only digital companies but also traditional companies to conduct digitalization. Petruzzi and Buriak (2018) stated that at least to some extent, all the digital businesses are traditional, and all the traditional businesses are digital. However, digitalization brings opportunities and challenges not only to the business environment, but also to the countries where companies operate. Digital business models that emerged as an impact of digital transformation made the physical presence of a company in the market become more irrelevant, the mobility of intangibles become more important, and the need for high-degree integration of the value chain increase. All of these create challenges for taxation, including the income shifting practice, in the digital economy (Olbert and Spengel, 2017).

Nevertheless, empirical research which examines the relationship between digital business models and income shifting is still scarce. This lack of evidence occurs as a result of the unavailability of data to investigate the degree of digitization along with the organizational and financial characteristics of digital business models (Olbert and Spengel, 2017). To determine the degree of digitization is the biggest challenge because traditional metrics are only capable of partially capturing the degree of digital technologies implementation and unable to reflect the fast pace of digital transformation (OECD, 2019).

The Level of Digitalization in this study is an intangible asset because it is a key asset for the digital business model as well as the income shifting practice. According to Olbert and Spengel (2017), studies on tax-motivated use of intangibles may provide insights into the challenges faced by taxation in the digital economy, particularly the income shifting challenge. Crotti (2021) examined the effect of intangible asset intensity on profit shifting by MNCs using the income-shifting approach by Hines and Rice (1994) modified by Huizinga and Laeven (2008) and the parent-subsidiaries panel data set from Orbis. The study found that companies with high intangible intensity had higher profits in low-tax jurisdictions. Furthermore, the study also found that there was no significant difference regarding profit-shifting behavior between tech companies and non-tech companies. Hence, intangible assets strengthen the inverse relationship between tax differentials and reported pre-tax profits.

Dischinger and Riedel (2011), Griffith et al (2014), as well as Dudar and Voget (2016) evaluated the influence of corporate income tax rate on firms' decision to locate the legal ownership of their IP and they found that corporate tax rates are an important determinant. Grubert (2003) found that research and development (R&D) based intangibles are a major component of income shifting from high-tax to low-tax countries, subsidiaries that have high intensity of R&D also have high volume of intercompany transactions, and US parent companies respond to the opportunities for income shifting by investing on R&D in countries with either very high or very low statutory tax rates.

Thus, the different levels of digitalization among firms may strengthen or weaken the relationship between the income shifting incentive and tax-motivated income shifting. Therefore, based on the research background and previous studies, this study examined whether Indonesian foreign-owned manufacturing companies shift income in respect to their foreign-parent tax rate. Furthermore, this study examined whether level of digitalization exacerbates the income-shifting of foreign-owned Indonesian manufacturing companies using the income-shifting approach by Hines and Rice (1994) modified by Purba (2018) extended with the level of digitalization which is intangible asset intensity.

We suggest that when the tax rate of the parent is higher than that of the affiliate, the affiliate generates higher profit (Purba, 2018; Dharmapala, 2014a). On the contrary, affiliates whose parent company has lower tax rate tend to shift profit out of the host country that implies a lower profit reported by the affiliates. Thus, the profit of foreign-owned Indonesian manufacturing companies is positively associated with the parent company's tax rate. Furthermore, we extended the baseline model by including the moderating variable of level of digitalization. We suggest that MNC's affiliates in Indonesia with higher intensity of intangible assets, which are considered more digitized than others, reported higher profit with respect to the higher parent's tax rate. Thus, the level of digitalization as a moderating variable strengthens the relationship between income shifting incentive and income shifting.

Research on income shifting and the role of digitalization is relevant to the current technological developments in the business world. Digitalization is an interesting issue because there are demands that force businesses to adapt to technology. Meanwhile, the issue of income shifting practices has always been a concern because of the conflict of interest between

the shareholder as the owner and the management as the agent. For example, self-interested managers may propose a situation to structure the firm in a complex manner that facilitates transactions to reduce taxes and divert corporate incremental benefits such as after-tax earnings for their own benefits (Hanlon and Heitzman, 2010). This opportunistic behavior by managers may result in disadvantages and high risks for owners and creditors. Hence, the owners ought to structure appropriate incentives to ensure that managers make tax-efficient decisions for the benefits of the owners by linking compensation to after-tax returns or stock price (Hanlon and Heitzman, 2010; Bauer et al, 2018). Therefore, this study aims to examine whether digitalization exacerbates income shifting in Indonesia.

RESEARCH METHOD

This study used the renowned income-shifting approach by Hines and Rice (1994) with some modification by Purba (2018). The Hines and Rice's (1994) approach assumes that the total income of an affiliate consists of the sum of true income and shifted income (Dharmapala, 2014a; Klein et al, 2020). True income is empirically difficult to assess. The model approximates true income using the Cobb-Douglas production function as the return to invested capital, labor, and productivity. On the other hand, shifted income is represented by the tax incentive for inbound or outbound income shifting which is the local tax rate.

Purba (2018) modified Hines and Rice (1994) model in several ways. First, the dependent variable is represented with pre-tax profit rather than EBIT because pre-tax profit is expected to capture income shifting through all channels better. In particular, the pre-tax profit used in this study includes accounting profit and taxable income. Second, the independent variable is represented by the parent's statutory tax rate rather than the average tax rate in host countries. Last, the control variable for the level of productivity in the local country (A) is excluded because the study examined the MNCs affiliates in only one host country which is Indonesia. Moreover, the Hines and Rice's (1994) approach uses aggregate country-level datasets while Purba (2018) uses firm-level data which may enhance the credibility of the income shifting estimates (Dharmapala, 2014a).

Similar to the previous study, the dependent variable in this study is pre-tax profit of foreign-owned Indonesian companies. According to Heckemeyer and Overesch (2013) and Purba (2018), pre-tax profit may capture the income shifting activity better because it is influenced by all channels of income shifting. Meanwhile measurement such as EBIT may capture income shifting activity in particular channels such as transfer pricing better.

The independent variable is the parent's statutory tax rate. Similar to Purba (2018), the home country of foreign parent refers to the country where the immediate parent is located, not where the ultimate parent is. Therefore, the parent company in this research is selected based on the reported shareholders in the financial report which own at least 50% of shares of its Indonesian affiliates. Furthermore, according to Dharmapala (2014a), statutory tax rates are more suitable for income-shifting research than effective tax rates because they are determined by governments, thus exogenous to a firm's decision while effective tax rates are influenced by decisions made by firms.

In the same manner as Purba (2018), Klein et al (2020), and Amberger et al (2020), the capital input is proxied by fixed tangible assets of the Indonesian affiliates while the labor input is proxied by employee compensation based on all of the reported salary expenses.

This model is extended with moderating variables of the level of digitalization proxied by intangible asset intensity. According to Crotti (2021), this measurement portrays how much intangible assets are used by a company in its production. The intangible asset intensity is calculated as total intangible assets divided by total assets (Richardson and Taylor 2014; Suqih and Jasman, 2018; Nurhidayati and Fuadillah, 2018; Firmansyah and Yunidar, 2020; Crotti, 2021). Based on Beer and Loeprick (2015), the level of digitalization equals 1 if the intangible asset intensity of a firm lies above the median sample, while 0 if otherwise.

$$IAI_{it} = \frac{total\ intangible\ assets_{it}}{total\ assets_{it}}$$

Based on the rationale, the following model will be used to determine the relationship between digitalization and income shifting:

$$logPP_{it} = \beta_0 + \beta_1 PTR_{it} + \beta_2 logK_{it} + \beta_3 logL_{it} + \beta_4 LD_{it} + \beta_5 PTR_{it} * LD_{it} + \mu_i + \delta_t + \varepsilon_{it}$$

PP_{it} = pre-tax income of Indonesia's foreign-owned manufacturing companies *i* for year *t*
PTR_{it}= parent's statutory tax rate of Indonesia's foreign-owned manufacturing companies *i* for year *t*
K_{it} = capital input of Indonesia's foreign-owned manufacturing companies *i* for year *t*, proxied by fixed tangible assets
L_{it} = labor input of Indonesia's foreign-owned manufacturing companies *i* for year *t*, proxied by employee compensation
LD_{it} = level of digitalization of Indonesia's foreign-owned manufacturing companies i for year t, proxied by dummy variables of *0* and *1*.
μ_i = Indonesia's foreign-owned manufacturing companies i fixed effect
δ_i = year t fixed effect
ε_{it} = error term

This research employed a quantitative approach with data from Indonesia Stock Exchange (IDX)

Table 1. Research Sampling

Number of listed companies based on IDXIC in 2021	**367**
Reduced by:	
- Number of companies listed at IDX after 2011	155
- Number of companies that were delisted in 2011-2019	0
- Number of companies that is not foreign-owned in 2011-2019	152
- Number of companies that did not publish annual financial reports sequentially in 2011-2019	0
- Number of companies that report loss in 2011-2019	37
Total of samples	23
Observation year	9
Total of observations (company year)	**207**

in the period of 2011, when digital transformation started, until 2019. Manufacturing companies are suitable as the object of this study because every industrial revolution started from the manufacturing industry. This study focused on Indonesian manufacturing companies owned by foreign-entities and part of MNCs. Based on the population of data, the data sampling was conducted using purposive sampling technique . To select samples, the following criteria are used:

a)Companies listed in the IDX Industrial Classification (IDXIC) in the sector of Basic Materials, Industrials, Consumer Non-Cyclicals, Consumer Cyclicals, and Healthcare. b)Companies whose shares are listed and actively traded on the IDX in the period of 2011-2019. c)Companies that were not delisted in the period of 2011-2019. d)Companies that were owned by foreign entities in the period of 2011-2019. e)Companies that publish annual financial reports in the period of 2011-2019. f)Companies that did not report loss in the period of 2011-2019.

Based on a previous study by Purba (2018), this study examines income shifting between an affiliate in Indonesia with its parent in home country. The home country refers to the country where the immediate parent is located, not where the ultimate parent is. This study selected manufacturing companies in Indonesia whose at least 50% of its shares are owned by foreign companies. In the end, we conducted 207 observations (company year).

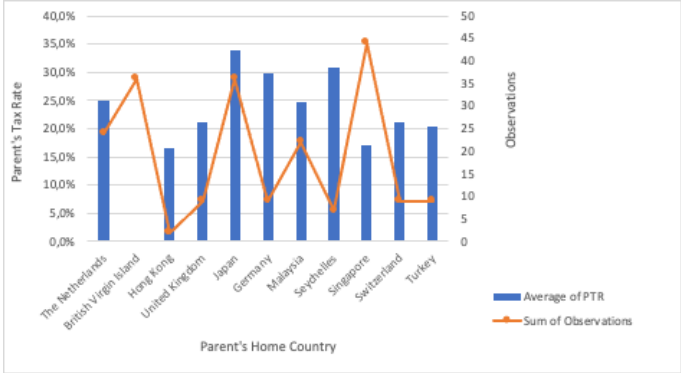
RESULT AND DISCUSSION

Overview of Research Sample

This study focuses on manufacturing companies in basic materials, consumer cyclicals, consumer non-cyclicals, healthcare, and industrials sector. There are 367 companies classified under these sectors. However, 155 companies were listed after 2011 which is the start of the observation year of this study, 152 companies are not foreign-owned, and 37 companies reported losses during the observation year. In the end, only 23 companies qualified as samples of this study. Most of the samples are classified under the Consumer Non-Cyclicals with 10 companies from various sub-industries such as liquors, personal care products, and processed foods. Meanwhile, the Healthcare sector has the least number of companies as a sample.

Within nine years, 207 observations were conducted. Among these observations, there are eleven countries registered as the home country of Indonesian manufacturing companies' foreign parents.

Figure 1. Overview of the Parent's Tax Rate



Most of the parents are located in Singapore. However, it has the third-lowest average PTR after Hong Kong and British Virgin Island. Meanwhile, Japan has the highest average PTR and on the second place with the British Virgin Island as the location of most parents. On the other hand, British Virgin Island has the lowest average of PTR with 0% throughout the observation years.

Descriptive Statistics

This section examines further the data related to the variable used in this research. The logarithmic value of pre-tax profit (LogPP) as the dependent variable has an average value of 11.31 while the maximum and minimum value have significant differences with Rp745 trillion and Rp35 million respectively.

The independent variable, PTR, has an average value of 20.2% that is lower than Indonesia's statutory tax rate in 2011-2019 which is 25%. The maximum value of 39.5% belongs to Japan's statutory tax rate in 2011-2012 and minimum value of 0% belongs to the British Virgin Island. Meanwhile, the logarithmic value of fixed tangible assets (logK) and logarithmic value of employee compensation (logL) showed an average of 11.80 and 11.10 respectively.

Another independent variable is level of digitalization (LD) which is a dummy variable of 1 for companies with intangible asset intensity above the median, and 0 for otherwise. From the 207 observations, there are 103 samples with value of 1 which indicates digitized companies. Meanwhile, there are 104 samples with the value of 0.

The interacting value of PTR and LD has an average value of 0.12. The maximum value of 0.39 is generated from the interaction of Japan's highest statutory rate in 2011-2012 with the LD value of 1. On the contrary, the minimum value of 0 is generated more because the PTR value of 0% than the LD value of 0.

The Baseline Result of the Hines and Rice's (1994) Model Modified by Purba (2018)

Based on the preliminary test, the Fixed Effect Model (FEM) is chosen as the most appropriate approach for this research. Afterwards, the Gauss-Markov Theorem test was conducted. The First, normality test was conducted. The result of the normality test showed that the data is normally distributed as demonstrated by the Jarque-Bera probability value of 0.163941, which is above the α value of 5%.

Second, the heteroscedasticity test was performed. To examine whether the regression model is independent from inconsistent error variance that makes the prediction results uncertain, the absolute regression residual was conducted. The result showed that all the variables have p-value below the α value of 5%. Therefore, the regression suffered from heteroscedasticity. Hence, the regression is treated with the white heteroscedasticity consistent standard error and covariance with cross-section weighting to resolve data that is not homoscedastic. The result showed changes of the p-value in few independent variables as well as an increase in the value of adjusted R-squared to 0.988888 implying that the tested independent variable is capable of interpreting the dependent variable.

The third was the multicollinearity test. Based on the Correlation Matrix, most of the independent variables have correlation values below 0.80. Hence, there are no perfect or nearly perfect linear relationships in the regression model.

The fourth was the autocorrelation test. The FEM regression result obtained Durbin-Watson stat (DW-stat) of 1.513009 which is below the Durbin Lower (dL) value of 1.75483 and the Durbin Upper (dU) value of 1.79326. To address this issue, this research used the Cochrane-Orcutt method that adjusts serial correlation in the error term of a linear model. After the adjustment, the DW-stat value changed to 1.864731 which is above the dL value. Thus, there is no positive autocorrelation. Next, we deducted the DW-stat value by 4 and compared the result with the dU value. The result is 2.135269 which is above the dU value. Hence, there is no negative autocorrelation as well. Overall, the regression passed the autocorrelation test. In summary, the research model of this research passed all the Gauss-Markov Theorem . Thus, it can be concluded that the model is Best Linear Unavailable Estimation.

Table 2. The Regression Result of H1

Variable	Expected Sign	Coefficient	t-Statistic	Prob.
PTR	+	-0.601353	-1.422581	0.1572
LogK		-0.009761	-0.397407	0.6917
LogL		0.526902	2.046804	0.0426

R-squared	0.990907
Adjusted R-Squared	0.989061
F-statistic	536.7844
Prob(F-statistic)	0.000000

The baseline regression result in Table 2 indicates that the independent variables are capable of predicting the dependent variable based on the great value of the Adjusted R-squared which is 99% and the p-value of the F-test that is smaller than the α value. However, almost all of the p-values of the T-test are statistically not significant.

The parent's tax rate is not significant with a negative coefficient which differs from the expected sign and previous study. Thus, the PTR is not associated with the pre-tax profit of foreign-owned Indonesia manufacturing companies, and it does not act as the incentive to shift income to foreign parent companies. Therefore, the first hypothesis is rejected.

The Moderated Regression Analysis Result

Based on the preliminary test, the Fixed Effect Model (FEM) is also chosen as the most appropriate approach for this research. Subsequently, the Gauss-Markov Theorem test was conducted. The first was the normality test. Based on the Jarque-Bera probability value of 0.104834 which is above the α value of 5%, it can be concluded that the data is normally distributed.

The second was the heteroscedasticity test. To examine whether the regression model is free from inconsistent error variance that made the prediction results uncertain, the absolute regression residual was conducted. Based on the result, LogK and LogL have p-value below the α value of 5%. Therefore, the regression suffered from heteroscedasticity. Hence, the regression is treated with the white cross-section standard errors and covariance with cross-section weighting. The result showed changes of the p-value in few independent variables as well as an increase in the value of adjusted R-squared to 0.989295. Thus, it can be concluded that the data is homoscedastic.

The third was the multicollinearity test. Based on the Correlation Matrix, most of the independent variables have correlation value below 0.80 except the level of digitization and moderating variable of PTRxLD which showed correlation value of 0.951. However, according to Liana (2009), Disatnik and Sivan (2014), and McClelland et al. (2017), the moderated multiple regression added to an additive regression model create an interval scaling which produces multicollinearity among independent variables that has no effect on the value of the coefficient or its standard error. Thus, it is not a problem and irrelevant to estimate and test the interaction. Hence, there are no perfect or nearly perfect linear relationships in the regression model.

The fourth was the autocorrelation test. The FEM regression result shows Durbin-Watson stat (DW-stat) of 1.523730 which is below the Durbin Lower (dL) value of 1.725558 and the Durbin Upper (dU) value of 1.82294. To address this issue, this research implemented the Cochrane-Orcutt method that adjusted serial correlation in the error term of a linear model. The DW-stat value changed to 1.899113 which is above the dL value. Thus, there is no positive autocorrelation. Next, we deducted the DW-stat value by 4 and compared the result with the dU value. The result is 2.100887 which is above the dU value. Hence, there is no negative autocorrelation as well. Overall, the regression passed the autocorrelation test. In summary, the research model of this research passed all the Gauss-Markov Theorem. Thus, it concludes that the model is Best Linear Unavailable Estimation.

The moderated regression analysis result in Table 3 indicates that the independent variables are capable of predicting the dependent variable based on the great value of the Adjusted R-squared which is 99% and the p-value of the F-test that is smaller than the α value. However, almost all of the p-values of the T-test are statistically not significant.

The parent's tax rate is not significant with a p-value of 0.7420. However, the coefficient sign has

Table 3. The Regression Result of H2

Variable	Expected Sign	Coefficient	t-Statistic	Prob.
PTR	+	0.160637	0.329955	0.7420
LogK		-0.022068	-0.910149	0.3644
LogL		0.443569	1.704154	0.0907
LD		0.128913	1.511805	0.1330
PTRxLD	+	-0.818269	-4.043422	0.0001
R-squared		0.990479		
Adjusted R-Squared		0.988372		
F-statistic		469.9501		
Prob(F-statistic)		0.000000		

changed from negative to positive which is consistent with the expected sign and previous research. Nevertheless, the PTR is not associated with the pre-tax profit of foreign-owned Indonesia manufacturing companies, and it does not act as the incentive to shift income to foreign parent companies.

The LD variable is also insignificant with p-value of 0.1330. Thus, it does not influence the reported pre-tax profit. On the other hand, the p-value of the interaction term PTRxLD indicates a significant influence with the value less than the α value. However, the coefficient sign differs from the expected sign. Thus, the second hypothesis is also rejected.

The regression result of the baseline results as well as the moderated regression analysis result show that both hypotheses are rejected. For the first hypothesis, we suggest that the profit of foreign-owned Indonesian manufacturing companies is positively associated with the parent company's tax rate. Similar to Purba (2018), we propose that when the parent has a higher tax rate than the affiliate's, the affiliate generates higher profit (Dharmapala, 2014a). On the contrary, when the parent has a lower tax rate, the affiliate generates lower profit. However, the result in Table 10 shows otherwise.

The inconsistent result of the first hypothesis test may be due to several reasons. Based on the income-shifting theory and previous studies, income shifting may occur due to differences in the tax rate of home and host countries between parents and affiliates as well as among affiliates. The income shifting between the parent company in a home country and its affiliate in a host country is in its simplest form. This argument has been proved empirically by Purba (2018). However, this study obtained different results which suggest that foreign-owned Indonesian companies did not shift income with its parent in home country, but it did not rule out the possibility that income shifts across affiliates in other countries particularly affiliates in tax-haven countries (Suqih and Jasman, 2018; Nurhidayati and Fuadillah, 2018).

Different data sources may also contribute to the result difference. The general purpose of financial report is to provide information regarding the company that is useful for present and future shareholders, lenders, and other creditors in making decisions about the provision of resources to the company; hence, firms may adjust their financial statements according to the primary user of their report (Kieso et al., 2018). Purba (2018) examined the income tax return data from Indonesia tax authority for the purpose of fulfilling tax obligations. This data might vary from the source of data for this research that is the financial report of a public-listed company which is presented to the shareholders or public.

Based on agency theory, risk-neutral shareholders expect managers to act on their behalf to focus on profit maximization, which includes seizing opportunities to reduce tax liabilities if the expected incremental benefit exceeds the incremental cost. Therefore, this situation may indicate that tax-efficient measures were conducted by the management or agent to increase the after-tax wealth of the owners while seizing opportunities to reduce tax liabilities (Hanlon and Heitzman, 2010; Putra et al, 2018). Moreover, other references of this research, Klein et al (2020) and Amberger et al (2020) which also employed Hines and Rice's (1994) approach, utilized unconsolidated financial data of all affiliates in a group. Hence, it might increase the possibility of capturing the income-shifting pattern in an MNC.

For the second hypothesis, we suggest that the different levels of digitalization among firms may strengthen or weaken the relationship between the income shifting incentive with tax-motivated income shifting. Thus, we expect that the MNC's affiliates in Indonesia with higher intensity of intangible assets, which are considered more digitized than others, reported higher profit with respect to the higher parent's tax rate. However, the result in Table 3 shows the contrary.

The moderated regression analysis result of the second hypothesis in that digitalization does not strengthen the influence of tax rate on income shifting unlike previous studies by Klein et al (2020), Amberger et al (2020), and Crotti (2021). The result differences may occur due to several reasons. First, the intangible asset intensity is calculated based on only the intangible asset and total assets owned by the Indonesian affiliates while prior studies such as Dischinger and Riedel (2011), Griffith et al. (2014), Beer and Loeprick (2015), and Amberger et al (2020) employed an affiliate-level intangible assets data from all of affiliates in a group.

Moreover, based on tax courts cases, several tax disputes arose from royalty fees expensed by taxpayers for the utilization of intangible assets owned by parent or other affiliates. In one case, PT X, a taxpayer registered in Indonesia, made a negative correction on the royalty fees based on the utilization of intangible property owned by Y Co. Ltd based in Japan. From the examination, it is found that Y Co. Ltd. is the shareholder of the taxpayer with 65% ownership. PT X was deemed as a contract manufacturing company because it was established with the aim of meeting the needs of the Y Co. Ltd. consumer market without the need to conduct product or marketing research. Because the taxpayer only abides by the production of Y Co. Ltd., PT X cannot take advantage of the IP's utilization. Thus, the royalty fee payment is unreasonable, or the fair value of the royalty fee is zero. Furthermore, PT X cannot prove that the IP belongs to Y Co. Ltd. This transaction was at risk of becoming a means of tax evasion.

Another case, PT B, a taxpayer registered in Indonesia, has charged a royalty fee in other expenses for the 2014 Corporate Income Tax's calculation. The payment was made to D Co. Ltd, a company based in Japan which owned 99.86% of PT B's share and thus did not conform to arm's length transactions. Based on the results of the examination, the royalty fee cannot be linked to the cost used to earn, collect, and

maintain income. Furthermore, the taxpayer cannot prove the existence of the royalty fee.

Third, based on income-shifting theory, there are two prominent channels to shift taxable earnings which are tax-efficient financial structures such as debt contracts and non-financial techniques like transfer pricing. Thus, it is possible that foreign-owned Indonesian companies use means of income shifting other than intangible assets as their income shifting strategies. Purba (2018) also found that foreign-owned Indonesian companies used transfer pricing predominantly as their income shifting channel rather than debt financing.

There are several limitations of this study and suggestions for future studies. First, the dependent variable of this study is only pre-tax profit. Future studies may employ other proxies to capture income shifting patterns better such as earnings before income tax and interest (EBIT), foreign return on sales, or cash effective tax rate. Furthermore, the future studies may apply two dependent variables similar to Purba (2018) who utilized the accounting profit as well as taxable income.

Second, this study used the acclaimed income-shifting model by Hines and Rice (1994) with some modification by Purba (2018). However, there are other models to detect income shifting such as Collins et al. (1998) modified by Klassen and Laplante (2013). Other modified models of Hines and Rice's (1994) approach are also available, like the modification model by Huizinga and Laeven (2008) or De Simone et al. (2017) employed by Amberger et al (2020).

Third, this research only takes into account the parent's statutory tax rate. Future studies may consider other affiliates' tax rate, the difference between the tax rates, or the average tax rate in the MNCs. Furthermore, the studies might utilize the effective tax rate rather than statutory tax rate. Fourth, the degree of digitization in this study is the intangible asset intensity from the Indonesian affiliates. Therefore, future studies may expand this variable with intangible asset intensity from parent and other affiliates in a group. Moreover, other appropriate measurements may also be applied, for instance the IT index by Klein et al (2020), HighEComm by Klassen and Lapante (2013), and patent concentration by Amberger et al (2020). Fifth, the object of this study includes public-listed manufacturing companies in the sector of Basic Materials, Consumer Cyclicals, Consumer Non-Cyclicals, Healthcare, and Industrials in IDX. Future studies may focus on other sectors or even unlisted companies.

CONCLUSION

Based upon the regression result and the discussion in respect to previous studies and theoretical framework, this study concludes several points. First, using the renowned income-shifting approach by Hines and Rice (1994) with some modification by Purba (2018), this study found that the PTR is not associated with the pre-tax profit of foreign-owned Indonesia manufacturing companies. Hence, the PTR does not act as the incentive for outbound shift to foreign parent companies. However, it did not rule out the possibility that income shifts across affiliates in other countries particularly to affiliates in tax-haven countries (Suqih and Jasman, 2018; Nurhidayati and Fuadillah, 2018).

Different data sources may contribute to the inconsistent result with the hypothesis . The general purpose of financial report is to provide information about a company that is useful for present and future shareholders, lenders, and other creditors in making decision about the provision of resources to the company; hence, firms may adjust its financial statements according to the primary user of its report (Kieso et al., 2018). Purba (2018) examined the income tax return data from Indonesia tax authority which might vary from the source of data for this research that is the financial report of a public-listed company which is presented to the shareholders or public. This situation may indicate a tax-efficient measure which was conducted by the management or agent based on the agency theory to increase the after-tax wealth of the owners while seizing opportunities to reduce tax liabilities (Hanlon and Heitzman, 2010; Putra et al, 2018).

Second, this study also found that digitalization does not strengthen the influence of tax rate on income shifting of Indonesia's foreign-owned manufacturing companies which differs from the result of previous studies by Klein et al (2020), Amberger et al (2020), and Crotti (2021). Thus, more digitized companies may not take advantage of their digital business models to shift income out of Indonesia in regard to their parent's tax rate. However, it does not rule out the possibility that foreign-owned Indonesian companies use other means of income shifting such as transfer pricing and debt contracts as income shifting strategies.

The result differences may occur due to several reasons. First, the intangible asset intensity is calculated based on only the intangible asset and total assets owned by the Indonesian affiliates while prior studies such as Dischinger and Riedel (2011), Griffith et al. (2014), Beer and Loeprick (2015), and Amberger et al (2020) employed affiliate-level intangible assets data from all of affiliates in a group. Second, based on tax courts cases, several tax disputes arose from royalty fees expensed by taxpayers for the utilization of intangible assets owned by parent or other affiliates. Third, based on income-shifting theory, there are two prominent channels to shift taxable earnings which are tax-efficient financial structures such as debt contracts and non-financial techniques like transfer pricing. Thus, it is possible that foreign-owned Indonesian companies use other means of income shifting other than intangible assets as their income shifting strategies. However, this study may initiate future studies on the relationship between income shifting and digitalization by employing different measurements or expanding the research's samples.

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