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Malaysian multinational companies (MNC): Permanent and temporary nature of tax planning

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Abstract: Tax gap measures differences between tax theoretically due and tax actually paid. Researchers and authority attribute tax gap as a measure of tax planning. At a firm level, the measure is often referred to book-tax difference (BTD), which has been utilised by researchers as a measure of tax planning given the unavailability of tax return data. In line with tax gap, BTD measures the extent taxable income deviates from the accounting income. As multinational companies (MNC) have more opportunities to effectively avoid tax than the domestic-only companies, it is hypothesised that the MNC's permanent component of BTD (PD) differs significantly from the temporary component (TD). The sample is Bursa Malaysia-listed MNC and the data are drawn from *Datastream* and annual reports. Using a direct consistency test, this study reports the behaviour of BTD and its main components, PD and TD, over 2008–2014. To investigate whether BTD can be explained by firm-specific, the data are also analysed using panel regression models. Foreign sales, earnings management and auditor are found significant in explaining the aggregated tax planning measure. PD is found as not only the source of the relationship but also outweighs TD in explaining the relationship. This study contributes to literature and practice in terms of the nature and behaviour of BTD and its components using MNC settings. Findings on disaggregated BTD can be inferred to MNC's effective tax planning strategies, particularly in addressing the questions or debates of whether the MNC have effectively utilised tax planning opportunities through permanent BTD.

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PUBLIC INTEREST STATEMENT

This study contributes to practice and policy, in particular relating to tax authority, by providing evidence on firm characteristics that can explain potential risks of tax planning, which can be considered in enhancing tax avoidance–risk investigation framework. This study also contributes to the taxation literature and practice by providing evidence of the nature and behaviour of differences between accounting income and taxable income, and their components using MNC settings. Public or market can be benefited from this study through knowledge on characteristics of MNC that can be useful in determining the MNC's firm value, in particular, when weighing the perceived benefits and potential non-tax costs, including reputational costs, of the activities within a set of company characteristics.

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1. Introduction

This study aims to investigate the extent Malaysian multinational companies' (MNC) tax planning activities, at both aggregated and disaggregated levels, consisting permanent differences (PD) and temporary differences (TD), can be explained by firm- and industry-specific characteristics. To further investigate the varying extent of the characteristics in explaining PD and TD, an examination of seemingly unrelated relationships between tax planning components and the characteristics is also conducted. To provide understanding on the trend of tax planning and its components, this study also examines the behaviour of aggregated tax planning, PD and TD across years. This provides knowledge on the persistence of MNC's tax planning behaviour that sheds light on drawing conclusions of MNC characteristics that are relevant to tax planning, in which the nature of the relationship can be useful in predicting the companies' tax planning level.

Corporate taxation has consistently been the main significant contributor to the Malaysian Government's revenue. In 2014, the proportion of corporate taxation in direct taxes is 32.15% relatively higher than the second contributor, petroleum income tax (Inland Revenue Board of Malaysia, [IRBM], 2015).[1] In recent years, Malaysian firms' policies and strategies relating to payment of taxation have come under intense scrutiny in the wake of increased number of resolved corporate tax audit cases, i.e. 19% increase in 2014 compared to 4% in 2013 (IRBM, 2014, 2015).[2] Similar pattern was also observed for transfer pricing audit cases, termed by the tax authority in Malaysia, IRBM, as *Base Erosion and Profit Shifting* (BEPS). There was 50% increase in BEPS cases in 2013 and the number of cases was further increased by 3% in 2014 (IRBM, 2014, 2015).[3] This indicates how critical the incidence of corporate tax planning[4] by multinational companies is. Following this, in its revised 2016 Budget, the government has considered doubling its current efforts to track down tax dodgers (Ministry of Finance, 2016).

Operating with larger economies of scale and under multiple jurisdictions, MNC are found to be more effective in tax planning than the domestic counterparts (Rego, 2003). Detecting and curbing the activities, particularly by multinational companies, can be costly to the government because tax planning activities involve secrecy and obfuscation (Desai & Dharmapala, 2009) as the companies can utilise multiple geographical settings and environments to their tax governance advantage. Issues on tax planning by MNC are also highly debated elsewhere. For example, in the UK, partly in response to the concerns and the observed fall in corporation tax receipts (HM Revenue & Customs, 2013), HM Treasury estimated that its anti-tax avoidance measures can 'protect' billions of tax revenues (HM Treasury, 2010). This comprises revenue to be raised from preventing tax avoidance schemes relating to transfer pricing, foreign investment and remuneration arrangements (HM Treasury, 2010). Recently, six world-renowned MNC, Apple, Facebook, Amazon, Google, Ebay and Starbucks were under fire for their "unfair share" of tax, i.e. as low as 0.3%, despite having generated £14 billion of revenue (Mirror Online, 2015). Given billions of revenue loss incidents, commentators argue that reducing the opportunity for such tax planning activities should be the first item on government's agenda, in which the levels of tax planning of these companies can be deduced from tax gaps.

Researchers and authority attribute tax gap as a measure of tax planning. At a firm level, the measure is often referred to book-tax difference (BTD), which has been utilised by researchers as a measure of tax planning given the unavailability of tax return data. In line with tax gap, BTD measures the extent the taxable income deviates from the accounting income. Given differing nature of tax planning activities in generating tax saving (Abdul Wahab & Holland, 2015), BTD can be further disaggregated into two components namely PD and TD. The components, respectively, reflect activities that can create permanent tax saving and activities that are conducted as a mere postponement of tax payments, which the former relates to strategic and aggressive tax planning activities

(Frank, Lynch, & Rego, 2009) while the latter is more on a reversal nature of tax planning. TD can be derived through deferred tax, in which the magnitude further provides input for the calculation of PD as a variation between aggregated tax planning measure and the TD.

As MNC have more opportunities to effectively avoid tax than the domestic-only companies, their permanent component of BTD is expected to be more prominent than the temporary component. The available literature however has only discussed the incidence of tax planning by MNC in aggregation (for example, Ariffin, 2013). To understand MNC's tax planning activities based on different natures of the activities, i.e. PD and TD, this study also examines the variations of magnitude and significance of the disaggregated BTD. The analyses on the breakdown of the BTD components reveal different consequences of the extent of foreign activities at firm and industry level. This study, therefore, also attempts to investigate the extent the PD and TD, in addition to aggregated BTD, can be explained by firm- and industry-specific. BTD and the components are measured based on Abdul Wahab and Holland (2015). The sample of this study is Malaysian non-financial listed MNC for seven years, 2008–2014. The tax data were hand-collected from the company annual reports while the financial data were drawn from *Thomson Datastream*.

Overall, this study finds that the extent of foreign sales, earnings management and auditor are significant in explaining the MNC's tax planning level. The evidence of persistence of the BTD and its disaggregated components across years is inconclusive. Permanent difference component is found as the main source of tax planning activities. The results also indicate the component is more prominent in explaining the initial significant relationship found between the tax planning and firm-specific characteristics.

This study contributes to the literature and practice in terms of the nature and behaviour of BTD and its components using MNC settings. The disaggregated measures of BTD allow for variations of consideration on methods of tax planning utilised by the MNC, hence highlighting the underlying motivation of the activities. Findings on disaggregated measure of BTD can be inferred as MNC's effective tax planning strategies, particularly in addressing the questions or debates of whether the MNC have effectively utilised the tax planning opportunities through permanent BTD. From the authority's perspective, the findings highlight characteristics of MNC that can be attributed to higher risks of tax planning, in which the significant firm-specific characteristics can be the input for tax avoidance–risk investigation framework. The findings can also be useful to the public or market by highlighting which MNC characteristics that can be useful in determining equity value of the companies, particularly when relating the activities with their perceived benefits or, on the other hand, potential risks as the activities involve secrecy and obfuscation (Desai & Dharmapala, 2009).

The remaining of this paper is structured as follows: Section 2 provides the relevant review of literature and hypothesis development and this is followed by Section 3, which presents the research design. Section 5 discusses the results. Section 6 presents further tests and Section 7 concludes the paper.

2. Literature review and hypothesis development

2.1. Theoretical aspect of tax planning
Hoffman (1961) relates theory of tax planning with principles or concepts of tax planning in a professional context on the ground that companies seek professional advices in managing their tax affairs. The principles or concepts are fourfold, first, tax planning is complex, second, tax planning can produce a large amount of benefits, third, tax planning is underutilised, and fourth, many are unaware of tax planning advantages. Tax planning is also theorised as has been developed based on tax loopholes, in which the methods are short-term given the popularity of the schemes provides insights to the authority to implement necessary actions in combating tax planning activities (Hoffman, 1961).

Effective tax planning, underpinned by Scholes–Wolfson framework (Scholes & Wolfson, 1992), outlines that companies involve in tax planning due to its perceived benefits, for example, after tax return, relatively more than the aim to minimise tax burdens as the latter can imply minimisation of revenue. Effective tax planning, termed by Shackelford and Shevlin (2001) as a positive approach of tax planning, is also referred as strategic tax planning, which in the execution considers a multilateral approach, consisting all taxes, all costs and all parties (Scholes & Wolfson, 1992).

Although benefits of tax planning can be theoretically drawn, companies are found to engage in tax planning at varying levels, leading to a phenomenon termed by researchers as "under-sheltering puzzle" (Gallemore, Maydew, & Thornock, 2014; Hanlon & Heitzman, 2010; Weisbach, 2002). This supports Hoffman's (1961) third and fourth principles or concepts of tax planning as the tax planning in reality is underutilised and this could be due to unawareness of the benefits. Companies, on the contrary, can be argued to exhibit prudence tax planning due to potential costs resulting from the activities, hence justifying risk-averse attitude towards tax planning. Alternatively, this can also signify consideration of effective tax planning (Scholes & Wolfson, 1992) after which the potential costs are found relatively more than the perceived benefits.

Researchers attribute effective tax planning by referring to permanent BTD (Abdul Wahab & Holland, 2012). While theories or framework of tax planning explain the incidence of tax planning in multiple aspects (for example, benefits, costs and realities), theoretical literature discussing tax planning from disaggregated tax planning perspective (PD and TD) are limited. The hypothesis development in relation to tax planning components in this study is therefore constructed based on empirical findings from previous studies.

2.2. Multinational companies and tax planning activities

MNC are perceived as having a wide range of incentives to effectively reduce their tax burden as they are operating with economies of scale and scope. This spans the advantages in influencing political cost and manipulating multiple geographical tax jurisdictions. Tax planning by MNC through income shifting has been a hot economic and legal topic around the world, surrounding the debate on "unfair share" of tax by global companies, for example, Google, Amazon, Apple and Starbucks, despite generating billions of revenue (Christians, 2014; Fisher, 2014). Income shifting through multiple geographical settings requires differences in tax rates by which income is transferred from companies that operate in higher rates to those in lower tax rate jurisdictions. This tax affair management model of an open economy can be utilised by MNC across industries although e-commerce businesses are found more prominent due to the anonymity and mobility of transactions as their operations are run by means of larger electronic networks (Agrawal & Fox, 2016; Klassen, Laplante, & Carnaghan, 2014). This tax arrangement has long been documented by previous literature, for example, Klassen, Lang, and Wolfson (1993), Mills, Erickson, and Maydew (1998) and Fuest and Weichenrieder 2002), within multiple research backgrounds including investment, tax burden and comparisons with domestic-only companies. Ariffin (2013) finds a significant negative relationship between ratios of overseas revenue to the total net sales with tax burden levels. The study, however, is restricted to aggregated measures of tax burden, leaving question on effective tax planning strategies and motivations by MNC unanswered.

Having subsidiaries in different tax jurisdictions allows the MNC to implement transfer pricing in their tax arrangement, in which the main objective is, *inter alia*, to reduce worldwide tax by manipulating their multinational organisation structure (Buckley, Sutherland, Voss, & El-Gohari, 2015; Martinson, Englebrecht, & Mitchell, 1999).[5] The successfulness of the strategy, however, is conditional upon independence of managerial control or autonomy. In many transfer pricing transactions, *Arm's Length Principle* limits the potential benefits that are aimed to be derived there from as the tax authority can apply "arm's length price" on inter-company transactions, i.e. substituting the inter-company price with "arm's length price" (Blonigen, Oldenski, & Sly, 2014; Taylor, Richardson, & Lanis, 2015).[6] One therefore may argue the effectiveness of transfer pricing as a method of tax planning, particularly amongst MNC.

As underpinned by Scholes–Wolfson Framework (Scholes & Wolfson, 1992), effective tax planning strategies by MNC are those that aim at increased after-tax returns. In an MNC setting, considering opportunities to reduce tax burden alone can potentially lead to increased non-tax costs, for example, reputational costs (Armstrong, Blouin, Jagolinzer, & Larcker, 2015; Gallemore et al., 2014) and reduction of firm value (Abdul Wahab & Holland, 2012; Armstrong et al., 2015). MNC are therefore seen to be cautious in managing their tax affairs to minimise the adverse effects of the activity. Although tax planning is claimed to increase after tax returns, the companies in reality engage in tax planning at varying levels, raising the debates related to "under-sheltering puzzle" amongst researchers (Gallemore et al., 2014; Hanlon & Heitzman, 2010; Weisbach, 2002) and this, given limited studies that investigate effects of firm characteristic on tax planning specifically in an MNC setting, demands for evidence of the extent the company characteristics can explain the MNC's engagement in tax planning.

Several taxation studies find evidence on various MNC's tax planning methods or channels, for example, income shifting to tax havens (Chari & Acikgoz, 2016; Gumpert, Hines, & Schnitzer, 2016; Jaafar & Thornton, 2015), transfer pricing (Jensen & Rosenzweig, 2015; Taylor et al., 2015) and utilisation of uniform accounting standard through IFRS adoption by affiliates (De Simone, 2016). While studies on multinational firms are reporting evidence on utilisation of tax havens and manipulation of affiliates' reporting regulation to reduce tax burdens (e.g. De Simone, 2016; Gumpert et al., 2016), studies examining firm level source of MNC tax planning are limited.

In particular, this study raises a question as to what extent the MNC characteristics can explain the differing levels of MNC's tax planning and its components. Although previous studies on MNC (e.g. Chari & Acikgoz, 2016; De Simone, 2016; Gumpert et al., 2016; Jaafar & Thornton, 2015) shed light on how MNC downwardly manage their tax, studies examining the relationship between MNC characteristics and permanent and temporary tax strategies are limited. Analysing the relationship between MNC characteristics and tax planning and its components allows an evaluation of underlying sources and motivations of MNC's tax planning behaviour in drawing inferences on the companies' tax affairs. This also further provides indications to the authority and public on a set of characteristics that can be useful when assessing tax planning risks related to MNC.[7]

Using Malaysian setting, Ariffin (2013) finds significant relationships between overseas income and tax burden. The study, however, has ignored the effects of firm and industry characteristics. This implies bias of firm characteristic influence on the findings, for example, earnings management measure as accruals was not separately estimated. The study has also analysed the relationship using all public-listed companies, implying general sample selection setting.[8] Further, tax planning in the study was measured using an aggregated tax burden measure, i.e. ETR, therefore limiting the findings to be inferred to strategic tax planning activities by the MNC.

Previous studies find a number for firm- and industry-specific as determinants of an aggregated tax burden. Given a general dearth of studies that investigate the extent the firm- and industry-specific can explain tax planning activity in MNC setting, the hypotheses of this study are drawn based on tax burden studies in non-MNC settings. Companies' proportion of foreign sales, a proxy for economies of scale and scope, implies the companies' opportunities to reduce their worldwide tax burden (Ariffin, 2013). In a tax planning context, MNC's engagement in tax planning is therefore expected to be increased in line with the increase in foreign sales. Similar to overseas sales, an adverse relationship is found between tax burden and earnings management. Companies with greater needs to manage their earnings, for example, for the purpose of bonus plan (Holland & Jackson, 2004; Nieken & Sliwka, 2015), are likely to be aggressive in accounting reporting. For this, aggressive accounting reporting companies are also found to be aggressive in tax reporting (Beuselinck & Deloof, 2014; Dharmapala & Riedel, 2013; Dowling, 2014; Frank et al., 2009). This provides indication that the MNC's engagement in tax planning would therefore have a positive relationship with earnings management. Companies' gearing ratio can also explain tax burden level as the ratio represents interest tax shield from debt covenant and the utilisations of debt financing. A substantial amount of debt facilities can attract significant interest deductions which can then affect firm tax

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provisions and performance (Abdul Wahab & Holland, 2012; McGuire et al., 2014), including through derivatives (Donohoe, 2015). MNC's engagement in tax planning is therefore expected to be in similar direction with the companies' gearing ratio. The next characteristic is capital intensity. Companies with high level of capital expenditure differ from non-capital intensive firms in their opportunity to manage tax affairs through capital allowance and other capital expenditure-related tax incentives. Tax burden studies find firms with greater capital intensity suffer lower ETR (Abdul Wahab & Holland, 2012; Gupta & Newberry, 1997; Hasan et al., 2016). Applying this to an MNC's tax planning setting leads to an expectation of positive relationship between tax planning and capital intensity.

Companies seek advice from auditors to manage their tax affairs as auditors exhibit superior knowledge of the companies' financial reporting (Gleason & Mills, 2012; Hogan & Noga, 2015). Using US data, McGuire, Omer, and Wang (2012) find companies that purchase tax services from their tax-specific expertise of the external auditor tend to engage in a larger extent of tax planning. Quality auditors, which can be measured using abnormal audit fees (Eshleman & Guo, 2013), have strong abilities to provide advices on effective tax arrangement and strategies. MNC's tax planning is therefore expected to have a significant relationship with the auditor quality. The next characteristic, industrial membership, has been long researched as a determinant of firms' ETR (for example, Harberger, 1959). It reflects *tax opportunity terrain* and industry-specific tax laws of a tax system (Mills et al., 1998). Given differing tax treatments and incentives for firms operating in different sectors (Abdul Wahab & Holland, 2015), industry classification is expected to have a significant association with companies' BTD level.

Inferring previous tax burden studies' findings to MNC's tax planning engagement implies variations of firm characteristics in explaining the extent of tax planning level. Although, based on Scholes–Wolfson Framework (Scholes & Wolfson, 1992), MNC are expected to engage in tax planning due to a wide-range tax planning opportunity and the perceived expected outcome of tax planning, i.e. increased after tax return[9], the companies may show preferences towards decreasing the tax planning level as depicted by "under-sheltering puzzle" (Weisbach, 2002) because the activity entails costs and reputational risks (Armstrong et al., 2015; Gallemore et al., 2014). These adverse effects of tax planning can then impair the companies' public image and public trust globally. Therefore, in line with tax burden studies, using an MNC setting, this study hypothesises that:

> H_1: The extent of multinational companies' book-tax differences can be explained by their firm- and industry-specific characteristics.

Previous tax planning studies have referred a company's tax planning aggressiveness as the extent of aggregated BTD (Jackson, 2015) and permanent difference between accounting and taxable income (Frank et al., 2009; Hanlon & Slemrod, 2009; Jackson, 2015; Wilson, 2009). PD are tax planning activities that reduce taxable income permanently, i.e. more than a mere postponement of a tax liability, and is linked to effective tax management and managerial aggressiveness (Frank et al., 2009; Hanlon & Slemrod, 2009). In addition, tax planning through tax deferral strategies is also found as a tax strategy that can generate tax advantages through cash flow timing benefit arising from TD. This is often referred as reversal method of tax planning as the benefits from the difference between the book and tax definitions is expected to reverse in future tax periods. TD is disclosed as deferred tax in companies' tax disclosures in financial reporting. This ultimately can affect companies' current year tax expense proportion.

These tax planning components to some extent provide details of the tax strategy properties to help decision-makers, for example, in valuing the companies and managing the companies' earnings. Based on the expected tax planning benefits of increased after tax returns (Scholes & Wolfson, 1992), MNC are expected to utilise their operations in multiple jurisdiction advantage and economic of scale-related opportunities to engage in more strategic tax planning activities than deferral tax strategies, which can be, respectively, exhibited by PD and TD. Distinguishing PD and TD in the relationship between firm characteristics and BTD is crucial to provide evidence on the underlying source of the BTD characteristic relationship as a direct firm characteristic effect on the BTD components

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implies differing preference of MNC in exploiting tax planning nature within a set of company demographics. To understand tax planning of MNC based on different nature of tax planning activities, i.e. PD and TD (Abdul Wahab & Holland, 2012, 2015), this study also examines the relationship between the BTD components and the above-mentioned characteristics.[10] It is therefore hypothesised:

> H$_2$: There is a significant difference of book-tax differences determinants between multinational companies' permanent and temporary differences.

Studies also associate strategic tax planning as permanent tax saving (Abdul Wahab & Holland, 2012, 2015; Frank et al., 2009). As MNC have greater opportunity to hold effective tax planning through, amongst else, affiliates (Gumpert et al., 2016; Rego, 2003), hence, generate 'permanent' tax benefits, PD component is hypothesised to be more prominent than the temporary component. This argument is developed in line with Scholes–Wolfson Framewok (Scholes & Wolfson, 1992) in which the perceived benefits from effective tax planning activities, i.e. increased after-tax returns, can be generated more effectively through PD compared to the TD as the latter is a mere postponement of tax liability. It is therefore hypothesised that:

> H$_3$: Firm-level source of book-tax differences is more prominent in explaining the permanent differences than the temporary differences.

3. Research design

3.1. Measurements of BTD and its components
BTD reflects differences between magnitude of two income measures, accounting and tax income (Hanlon, 2005). Given the unavailability of tax return data, researchers use BTD to measure tax planning as it can indicate tax planning benefits using both aggregated and disaggregated measures (Abdul Wahab & Holland, 2015). The disaggregated measure of BTD allows further analysis of tax motivation based on tax benefits that can be classified as permanent or TD, which the former relates to tax-motivated strategies, while the latter reflects earnings-motivated tax planning. In line with Abdul Wahab and Holland (2015), BTD is calculated as:

$$BTD = PT - TI \qquad (1)$$

where BTD is book-tax difference, PT is pre-tax income and TI is taxable income, which is measured as $\frac{CTE}{STR_{dom}}$ where CTE is current tax expense and STR$_{dom}$ is domestic statutory tax rates.

Disaggregating BTD into permanent difference (PD) and temporary difference (TD) gives:

$$PD + TD = PT - TI \qquad (2)$$

As TD is defined as $\frac{DTE}{STR_{dom}}$ (Abdul Wahab & Holland, 2015), where DTE is differed tax expense, substituting TD and TI in Equation (2) and rearranging yields PD as:

$$PD = PT - TI - \frac{DTE}{STR_{dom}} \qquad (3)$$

3.2. Regression equations
The following model is to investigate the extent that the BTD can be explained by the firm- and industry-specific.

$$BTD_{it} = \alpha_0 + \alpha_1 FS_{it} + \alpha_2 EM_{it} + \alpha_3 LEV_{it} + \alpha_4 CAPINT_{it} + \alpha_5 AUD_{it} + \alpha \sum_{5+k} IND_{it}^k + \varepsilon_{it} \quad (model1)$$

where BTD, a tax planning proxy, is book-tax difference derived from Equation (1), FS is the proportion of foreign sales on the companies' total sales (Rego, 2003), EM is earnings management (Hanlon, 2005), LEV reflects leverage (Mills et al., 1998), CAPINT is to capture capital intensity (Frank et al.,

Table 1. Variable measurement		
Variable	**Description**	**Measurement**
BTD	Book-tax differences	(Pre-tax income—Tax income)/total assets
PD	Permanent difference	Pre-tax income—Tax income—TD
TD	Temporary difference	Differed tax expense/domestic statutory tax rates
FS	Foreign sales	Percentage of foreign sales over total sales
EM	Earnings management	(PBT—Cash flow from operating activities)/total assets
LEV	Leverage	Long-term debts/total assets
CAPINT	Capital intensity	Ratio of gross machinery and equipment to total assets
AUD	Auditor fees	Audit fees/total assets
IND	Industry	Coded as 1 for each industry category based on Bursa Malaysia's industry classification, 0 otherwise

2009), AUD is auditor fee (Eshleman & Guo, 2013) and IND is for industry membership (Abdul Wahab & Holland, 2012). Table 1 presents the details of the variable measurements.

   To test the association between firm characteristics and the extent of tax planning based on the different nature of tax planning, the BTD variable in model 1 is substituted with PD and TD (Equations (2) and (3)) successively. The model is then estimated using seemingly unrelated approach (SUR) with Huber–White sandwich standard errors (Green, 2012; Zellner, 1962).[11] Variables BTD, PD, TD, EM, LEV and AUD in all models are deflated by total assets to control for potential scaling effects (Barth & Clinch, 2009; Horton, 2008).[12] This is consistent with Abdul Wahab and Holland (2015) in estimating persistence of BTD and its components.

3.3. Sample and data

The sample of this study is non-financial MNC Bursa Malaysia-listed companies for a seven-year period (2008–2014). Financial-related companies are excluded to control for heterogeneity in reporting regulation, hence controlling for reporting bias in the measurements (Abdul Wahab & Holland, 2015).[13] Year 2008 is to control for bias of corporate tax reform relating to single-tier tax system while year 2014 is to control for bias of effects of the IRBM aggressiveness in combating tax dodgers on 2015 reporting period.[14,15] MNC is defined as companies with foreign sales as reported in annual reports. To control for strong ability and consistency to conduct tax planning (Mills et al., 1998), the sample is filtered from non-persistent foreign sales and loss-makers throughout the period. This process results into 118 MNC (826 firm-years). Table 2 describes the sample selection process of this study. The data are gathered from both electronic database and company annual reports. As the tax data are not available in machine readable format, it is hand-collected from annual reports. The finance data are drawn from *Thomson Datastream*.

Table 2. Sample selection	
Details	**n**
Profitable non-financial public listed firms (listed throughout 2008–2014)	303
Domestic-only companies	(141)
Change of accounting year end	(29)
At least one year of annual report is not available	(15)
Initial sample	118
Firm-year (118 × 7 years)	826

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Table 3. Descriptive statistics				
n = 693	**Mean**	**Minimum**	**Maximum**	**SD**
Pre-tax income (RM million)	275.2356	0.0090	6634.3000	744.8603
Total assets (RM million)	3978.5660	40.7580	73000.0000	10300.0000
BTD (RM million)	−9.1512	−1869.9000	2446.3000	208.1578
PD (RM million)	−2.7860	−1799.7280	1735.2520	212.0441
TD (RM million)	−6.3652	−1898.8000	2343.5200	222.2377
BTD	0.0072849	0.0268776	−0.0874762	0.0920967
PD	0.0085794	0.0305465	−0.0741789	0.2942376
TD	−0.0012945	0.0199179	−0.2565843	0.0631111
FS	39.7879	0.1350	100.0000	25.9051
EM	−0.0011	−0.2002	0.2857	0.0591
LEV	0.0790	0.0000	0.5885	0.0984
CAPINT	0.2864	0.0002	1.5341	0.2393
AUD	0.0006	0.0000	0.0035	0.0004

3.4. Descriptive statistics

Prior to estimating the models, the data were initially screened for outliers and as a result of this, 19 companies were excluded from further analyses.[16] Distributions of the remaining observations, i.e. 693 firm-years, based on industries (in decreasing order) are industrial product 37%, consumer product 28%, trading and services 20%, plantation 6%, construction 5%, technology 3% and infrastructure-project company 1%. MNC from industrial product form the largest proportion of the sample. This is in line with the industry's significant export contributions to the country's GDP (The World Bank, 2015). Similar industrial product's ranking is also documented by previous tax planning studies using UK (Abdul Wahab & Holland, 2015; Abdul Wahab, Holland, & Soobaroyen, 2015) and US settings (Richardson & Taylor, 2015).[17] Descriptive statistics of the final sample are presented by Table 3. The pre-tax income of the MNC throughout the period is ranging from RM9,000 to RM6,634 million with an average of RM275 million. The average magnitudes of BTD and its components, PD and TD, are RM9 million, RM2.8 million and RM6.4 million, respectively, suggesting tax planning through temporal method contributes most to the aggregated tax gap. The scaled BTD and PD, in line with expected benefits of tax planning, are in positive directions indicating, on average, BTD and PD reduce taxable income compared to accounting income. As expected, due to reversal nature of TD strategy, the scaled TD is in a negative direction signifying temporary tax benefits of that particular tax planning strategy. Findings on scaled BTD and PD are similar with a recent UK BTD study, Abdul Wahab and Holland (2015), in which the scaled BTD and PD are reported as reducing the PBT of the companies. The TD, however, is on the contrary with the study, which TD in this study is reported as decreasing the PBT persistently throughout the years. In terms of trading activity, within a range of 0.14–100%, the MNC are documented as having an average of 40% overseas sales from the total sales. This proportion is similar to the US study's ratio of foreign pre-tax profit over the total pre-tax profit (Richardson & Taylor, 2015) but slightly higher (by 2%) than Abdul Wahab and Holland's (2015) statistic of foreign sales proportion in the UK setting.

4. Results and discussions

Table 4 reports the results from yearly direct consistency tests on BTD, PD and TD. Consistent positive BTD means are recorded throughout the years. The magnitude however drops significantly in 2013 but increases in 2014. On the contrary, the weighted BTD means are in negative signs except in 2011.[18] This shows that variations of the BTD magnitudes across years play a role in MNC tax planning strategy, consistent with the theory of economies of scale and scope (Rego, 2003). To investigate the persistency of BTD across years, the means were tested for their differences using ANOVA F statistic, Wilcoxon Wtest statistic and Levene's test of homogeneity of variance (UCLA, 2013).[19]

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Table 4. Annual descriptive statistics							
n = 99	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
BTD							
Mean[a]	0.0118	0.0118	0.0101	0.0092	0.0036	0.0008	0.0036
Minimum	−0.0523	−0.0803	−0.0875	−0.0606	−0.0619	−0.0750	−0.0674
Maximum	0.0782	0.0921	0.0806	0.0753	0.0736	0.0739	0.0876
Median	0. 0095	0.0094	0.0089	0.0085	0.0011	−0.0020	0.0008
Weighted mean	−0.0025	−0.0001	−0.0008	0.0015	−0.0021	−0.0049	−0.0056
Positive BTD (%)	68.69	68.69	67.68	64.65	52.53	45.45	51.52
PD							
Mean[b]	0.0182	0.0131	0.0089	0.0093	0.0063	−0.0008	0.0051
Minimum	−0.0496	−0.0618	−0.0742	−0.0655	−0.0584	−0.0631	−0.0721
Maximum	0.2942	0.1254	0.0818	0.1020	0.1580	0.0750	0.0921
Median	0.0110	0.0073	0.0068	0.0057	0.0011	−0.0019	−0.0004
Weighted mean	0.0017	−0.0133	−0.0081	0.0000	0.0044	0.0015	0.0049
Positive PD (%)	69.70	67.68	63.64	67.68	57.58	46.46	49.49
TD							
Mean[c]	−0.0064	−0.0013	0.0013	−0.0001	−0.0027	0.0016	−0.0015
Minimum	−0.2566	−0.0780	−0.0640	−0.0830	−0.1187	−0.0319	−0.0590
Maximum	0.0335	0.0631	0.0428	0.0580	0.0502	0.0398	0.0416
Median	−0.0006	0.0003	0.0007	0.0008	0.0000	0.0002	−0.0013
Weighted mean	−0.0042	0.0131	0.0073	0.0015	−0.0065	−0.0064	−0.0105
Positive TD (%)	42.42	51.52	52.53	50.51	49.49	52.53	44.44

[a]Difference between years: ANOVA $F = 2.83$ (6, 686)***, Wtest $W = 2.88$ (6, 305)*** and Levene's test $W = 0.26$ (6, 686) where *** is significant at 1% level (two tailed).

[b]Difference between years: ANOVA $F = 3.96$ (6, 686)***, Wtest $W = 3.67$ (6, 304)*** and Levene's test $W = 0.91$ (6, 686) where *** is significant at 1% level (two tailed).

[c]Difference between years: ANOVA $F = 1.85$ (6, 686)*, Wtest $W = 1.42$ (6, 304) and Levene's test $W = 0.89$ (6, 686) where * is significant at 10% level (two tailed).

In contrast to Abdul Wahab and Holland (2015), the results find inconclusive evidence of persistency of MNC's BTDs across years. In terms of tax planning, majority of the MNC generate tax benefits throughout the years by having lower taxable income relative to the accounting income except in 2013 as only 45% of the companies are having BTD that reduces the taxable income in that particular year. This could be due to the companies' intention to reap the perceived benefits of tax planning as highlighted by Scholes–Wolfson Framewok (Scholes & Wolfson, 1992) during the relevant years. Inconsistent persistency of BTD observed between this study and Abdul Wahab and Holland (2015) suggests institutional setting influence on tax planning level and this indicates limitations to replicate the findings across countries as the economic climate, political and regulations differ between countries.

A similar trend is observed in PD. There is a consistent positive PD means throughout the years until 2012 but it drops in 2013. The magnitude then increases in 2014. The weighted PD means are in negative signs only in two years, 2009 and 2010. Similar to the aggregated BTD, the evidence of persistency of MNC's PDs across years is also inconclusive. Majority of MNC generate tax benefits through PD, i.e. PD reduces the taxable income, during the first five years (2008–2012). This finding is in contrast with Abdul Wahab and Holland (2015), in which the component is found persistent throughout the years. Similar to the BTD, the findings are different at international level given the differences in economics, politics and regulations.

Table 5. Pearson correlation								
n = 693	**BTD**	**PD**	**TD**	**FS**	**EM**	**LEV**	**CAPINT**	**AUD**
BTD	1.0000							
PD	0.7666***	1.0000						
TD	0.1738***	−0.4992***	1.0000					
FS	0.214***	0.1758***	0.0192	1.0000				
EM	−0.0461	−0.0797**	0.0601	−0.0699*	1.0000			
LEV	−0.1573***	−0.1485***	0.0155	0.0902**	0.0343	1.0000		
CAPINT	0.1882***	0.2228***	−0.0876**	0.0613	−0.3877***	−0.0881**	1.0000	
AUD	−0.0836**	−0.0515	−0.0338	0.2011***	0.0058	−0.2057***	0.0861**	1.0000

*Level of significance at $p < 0.10$ (two-tailed).

**Level of significance at $p < 0.05$ (two-tailed).

***Level of significance at $p < 0.01$ (two-tailed).

The trend analysis on TD shows slight variations of magnitudes and signs relative to those of BTD and PD. TD means are recorded as negative in all years except in 2010 and 2013. Similar inconsistencies are observed in the weighted TD means with positive magnitudes only in 2009, 2010 and 2011. The test of differences of TD means between years indicates mediocre persistence of TD across the years. Numbers of companies utilising TD in tax planning are relative smaller than that of PD with majority MNC with positive TD are observed in only four (2009, 2010, 2011 and 2013) out of seven years, signifying the companies' preference in utilising PD over TD as the former is related to the opportunity for the MNC to exercise strategic tax planning which at the extreme continuum, can lead to aggressive tax planning (Hanlon & Slemrod, 2009).

The hypothesis testing was carried using regression estimations and t-tests. The models were firstly examined for multicollinearity. With the highest coefficient of 0.77 between BTD and PD, results from Pearson correlation suggest insignificant multicollinearity issue. Table 5 displays the bivariate correlation coefficients between continuous variables. To further investigate the potential of multicollinearity, the model was tested using VIF and consistent with Pearson correlation results, there is no significant issue of multicollinearity detected as the highest VIF component recorded is 2.47 relative to the threshold level of 10 VIF component (Hair, Black, Babin, Anderson, & Tatham, 2006). Similar results are derived using condition indices (Belsley, Kuh, & Welsch, 1980) with the highest index of 8.52, which is relatively lower than the threshold level of 30.

Results from panel and SUR estimations are presented by Table 6. As the Breuch-Pagan/Cook-Weisberg and White tests (White, 1980) indicate significant heteroscedasticity within the data, the models were estimated using adjusted standard errors to ensure asymptotically unbiased results. Column 2 of Table 6 reports estimations from regressing BTD on FS and other firm-specific characteristics. In line with previous studies (Ariffin, 2013; Rego, 2003), the extent of overseas sales is found positively ($p < 0.01$) related to the aggregated BTD, hence supporting the arguments of tax advantage of the MNC through utilisation multiple tax jurisdictions. This could be due to expected benefits of tax planning, i.e. increased after-tax returns (Scholes & Wolfson, 1992). Similar relationship is also documented between BTD and EM ($p < 0.10$) implying MNC with higher level of accruals tend to have higher level of tax planning. This supports Frank et al.'s (2009) arguments on a strong relationship between aggressive tax reporting and aggressive financial reporting. This can also signify needs of the MNC to manage their earnings, for example, due to remuneration (Holland & Jackson, 2004; Nieken & Sliwka, 2015) in which the effect can be depicted through aggressive reporting.

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Table 6. Regression estimations					
n = 693	Panel estimation	Seemingly-unrelated estimation		Panel estimation	
	Model 1	Model 2	Model 2	Model 3	Model 4
Dependent variable	BTD	PD	TD	PD	TD
FS	0.0002	0.0002	0.0001	0.0002	0.0001
	*3.48***	*4.79***	*0.75*	*3.45***	*0.83*
EM	0.0334	0.0103	0.0098	0.0174	0.0098
	*1.90**	*0.51*	*0.63*	*0.75*	*0.59*
LEV	−0.0070	−0.0282	0.0019	−0.0185	−0.0019
	−0.37	*−2.11***	*−0.19*	*−1.03*	*−0.24*
CAPINT	0.0061	0.0124	0.0037	0.0100	−0.0037
	0.72	*1.74**	*−0.68*	*1.24*	*−0.84*
AUD	−10.8189	−11.1166	1.6355	−10.6319	−1.6355
	*−3.20***	*−4.14***	*−0.98*	*−3.20***	*−1.08*
Construction	0.0008	0.0011	0.0003	0.0007	−0.0003
	0.10	*0.25*	*−0.14*	*0.11*	*−0.13*
Consumer product	0.0117	0.0090	0.0002	0.0105	−0.0002
	*2.15***	*2.85***	*−0.10*	*2.31***	*−0.09*
Industrial product	0.0167	0.0138	0.0001	0.0155	−0.0001
	*3.38***	*4.06***	*−0.03*	*3.78***	*−0.03*
Infrastructure-project	−0.0114	0.0073	0.0003	−0.0084	−0.0003
	*−1.44**	*−0.75*	*−0.02*	*−1.07*	*−0.08*
Plantation	0.0089	0.0082	0.0014	0.0090	−0.0014
	*1.74**	*2.40***	*−0.66*	*2.06***	*−0.45*
Technology	0.0370	0.0450	−0.0129	0.0480	−0.0129
	*2.93***	*3.71***	*−1.21*	*6.99***	*−1.77**
Constant	−0.0058	−0.0043	0.0005	−0.0044	0.0005
	−1.02	*−1.28*	*0.23*	*−0.97*	*−0.22*
Wald	211.16***	N/A	N/A	382.61***	14.05
R^2	37.14%	N/A	N/A	48.17%	18.06%
Breusch–Pagan (χ^2)	3.09*	8.58***	49.46***	8.58***	49.46***
White (χ^2)	129.38***	287.87***	321.47***	287.87***	321.47***
Estimation differences (χ^2)	N/A	95.27***	95.27***	N/A	N/A

Notes: Trading and services industry category is the reference group.

Italicised figures represent cross section Eicker–Huber–White adjusted t-statistics.

*Level of significance at $p < 0.10$ (two-tailed).

**Level of significance at $p < 0.05$ (two-tailed).

***Level of significance at $p < 0.01$ (two-tailed).

AUD is also significant ($p < 0.01$) in explaining MNCs' tax planning level but in an adverse manner. This suggests the role of audit quality (Eshleman & Guo, 2013) in influencing the companies' tax planning level as quality auditors can envisage the risks entailed by tax planning, for example, reputational cost (Armstrong et al., 2015; Gallemore et al., 2014) and risks of being investigated by the tax authority (Abdul Wahab & Holland, 2012). The result also implies advices sought for remedial actions on previous year's non-compliance tax arrangements. Significant relationships are also found between BTD and industry classifications, in particular, consumer product, industrial product, infrastructure-project company, plantation and technology with only infrastructure-project

company reported a significant negative association compared to others, hence supporting the arguments of different tax treatments for different sectors (Abdul Wahab & Holland, 2015; Harberger, 1959; Mills et al., 1998). Overall, the results support H_1 in terms of the relationship between tax planning with the extent of overseas sales, earnings management, auditor and industry memberships.

Column 3 and 4 of Table 6 reports two sets of SUR estimators for two components of tax planning, PD and TD, respectively.[20] Consistent with initial results of the relationship between BTD and FS (Column 2), PD is significant ($p < 0.01$) and positively related with FS. The observed relationship, however, is absent between TD and FS, suggesting PD as the source of the relationship between the aggregated BTD and the extent of overseas sales. This indicates utilisation of effective tax planning through permanent difference strategy by the MNC. In line with Frank et al. (2009), Hanlon and Slemrod (2009) and Wilson (2009), the result also signifies tax aggressiveness of the companies, which implies tax as the underlying motivation of the activities. The results also show variations of determinants between PD and TD. To statistically test the difference between PD's and TD's determinants as a whole, the estimates are tested for their significant differences. The univariate test results reject the null hypothesis (H_0: PD estimations = TD estimations) at $p < 0.01$ ($\chi^2 = 95.27$). This supports H_2 on significant difference of BTD determinants between MNC's PD and TD, indicating, in overall, determinants of PD are significantly different from the determinants of TD in terms of their magnitudes.

To investigate the prominence of PD over TD in explaining the relationship between tax planning and firm characteristics estimated in model 1 (Column 2), a subsequent panel model was estimated for each PD (model 3) and TD (model 4). Following this, series of univariate tests were run to examine the significant of differences between PD and TD determinants' estimates. The disaggregated estimation results of model 3 and 4 are reported in column 5 and 6, respectively. Except for EM, results of model 1 (Column 2) hold for model 3 but not for model 4. Consistent with model 2, the results support the contention of PD as the main tax planning strategy of the MNC. This is further supported by the insignificant findings of the relationships between TD and all determinants, except technology industry. The univariate tests confirm the significant differences of all estimates between PD and TD, except EM and construction industry, hence providing further evidence that PD outweighs TD in explaining firm-level source of BTD.[21] This provides evidence to support H_3 that predicts prominence of determinants of BTD in PD over TD. The significant variations suggest the preference amongst MNC in strategising tax planning activities using PD relatively more than deferral tax planning strategy. This could be due to the absence of ultimate benefit from temporary difference on the companies' tax positions (Abdul Wahab & Holland, 2015). The result also supports Raedy et al.'s (2011) argument on the components' variation implications on tax position despite insignificant valuation effect of disaggregated book-tax differences, at least in the MNC context. This confirms the utilisation of effective tax planning strategy by the MNC in utilising variations of tax treatments in multiple geographical locations. The finding also indicates the necessity to understand the variations between disaggregated tax planning effects on other tax-related aspects, including market value, tax management and corporate governance.

5. Further tests

Analyses related to the scaling effect and endogeneity are subsequently performed to assess the robustness of the above results. When estimating the models (models 1–4), to stabilise the variance in mitigating size effects on coefficient estimations, the continuous variables (BTD, PD, TD, EM, LEV and AUD) were scaled with total assets (Abdul Wahab & Holland, 2015; Richardson & Taylor, 2015). To further analyse the scaling effect on the estimates, all models are re-estimated using un-deflated variables with the inclusion of total assets as an independent variable (Barth & Kallapur, 1996). Qualitative similar results to those reported in Table 6 are found for EM, AUD, infrastructure-project and plantation for model 1. For PD of SUR estimation in model 2, the results of FS, EM, industrial product, infrastructure-project and plantation are also qualitatively similar to the results reported in Table 6, while for TD all results are found qualitatively identical to the initial results except industrial product and technology. For model 3, results for LEV, CAPINT, AUD, Construction, industrial product

and plantation are also qualitatively similar to the initial results. All variables except LEV, CAPINT, Infrastructure-project and Technology are qualitatively similar to that of Model 4 in Table 6. In interpreting the results, caution must therefore be exercised in attributing the source of the relationship between firm characteristics and tax planning due to the sensitivity of the estimates to the scaling effect.

To assess endogeneity bias in the estimations given potentials of simultaneous relationship between tax planning and foreign sales, model 1 is re-estimated using two-stage least-square estimations (2SLS). In the analysis, FS is instrumented in the regressions with one- and two-year lag FS as the instrumental variables.[22,23] The results of the 2SLS are qualitatively identical with the regression results reported in Table 6 except for EM ($\alpha = -0.0003$ $p > 0.10$), LEV ($\alpha = -0.0429$ $p < 0.05$) and Infrastructure-project ($\alpha = -0.0070$ $p > 0.10$). This signifies robust relationships between BTD and FS, CAPINT, AUD, construction, consumer product, industrial product, plantation and technology as reported in Table 6.

6. Conclusions

This study examines and finds the extent the firm characteristics can explain MNC's tax planning level at both aggregated and disaggregated tax planning levels. To understand the source of the observed relationship, this study extends the analysis by simultaneously regressing BTD components, PD and TD on the determinants. The dominance of the tax planning components is also examined by re-estimating each component on firm-specific characteristics. The findings indicate that foreign sales, earnings management and auditor are significant in explaining the aggregated tax planning measure. In specific, foreign sales and earnings management explain aggregated tax planning in a positive direction, signifying MNC that are operating in economies of scale and scope and exercising earnings management tend to exhibit higher level of tax planning. The auditor, however, is found to have a negative association with tax planning as quality auditors can gauge potential risks of the activities, hence justifying MNC's conservative tax planning attitude. From an industrial context, different nature of relationship between industry categories and the tax planning level is observed. All industries, except construction, are significantly related to MNC's tax planning level. While infrastructure-project industry explains tax planning level in a decreasing manner, consumer product, industrial product, plantation and technology industries are related to tax planning level in a positive direction. This provides evidence on different tax incentives or treatments across industries in Malaysia.

A descriptive analysis of the disaggregated tax planning measure, PD and TD, finds both components are not inclusively persistent throughout the years, suggesting the fluctuations of the disaggregated tax planning measures across the sample period. Further analyses on disaggregated tax planning specifically find PD as not only the source of the initial aggregated tax planning–firm-specific relationship but also more dominant than the TD counterpart, suggesting the utilisation of PD as the main MNC's tax planning strategy. This implies strategic tax planning arrangement by the MNC.

In summary, this study finds significant tax planning–firm-specific relationship of both aggregated and disaggregated tax planning using MNC settings. This study therefore contributes to practice and policy, in particular relating to tax authority, by providing evidence on firm characteristics that can explain potential risks of tax planning, which can be considered in enhancing tax avoidance–risk investigation framework. As there is limited study that investigates disaggregated tax planning using MNC data, the findings contribute to the taxation literature and practice by providing evidence of the nature and behaviour of BTD and its components using MNC settings. From the societal perspective, this study contributes to the public or markets in terms of shedding light on characteristics of MNC that can be useful in determining the MNC's firm value, in particular, when weighing the perceived benefits and potential non-tax costs, including reputational costs, of the activities within a set of company characteristics.

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Given the limitation of this study's sample framework, the findings are thus limited to be generalised to its population. This leads to a question as whether the characteristics of the MNC in explaining tax planning behaviour are replicable to a larger setting, for example, across organisational structure, economic conditions and country-specific. Further, in researching disaggregated tax planning using different avenues, future studies can consider individual component's fixed effects in explaining firm tax planning level across countries. This will allow comparisons of disaggregated tax planning between domestic and multinational companies, in which the findings can then be relevant to a larger population of multiple scopes of economy between countries.

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Notes
1. Corporate taxation, petroleum income tax and individual income tax are the top three contributors to the direct tax, in which the revenue collections from the taxes in 2014 were RM69.95 billion (52.32%), RM29.97 billion (20.17%) and RM26.65 billion (19.94%), respectively.
2. Across three years, the number of corporate audit cases solved was consistently increasing from 2012, i.e. 79,688, 83,093 and 98,615 in 2012, 2013 and 2014 respectively.
3. There were 78, 156 and 160 BEPS cases solved in 2012, 2013 and 2014, respectively.
4. In line with Abdul Wahab and Holland (2012), tax planning is defined as an activity that can generate tax benefits.
5. Transfer pricing is defined as techniques to determine the price of goods or services that were transferred between related parties (Martinson et al., 1999).
6. Transfer price is the price that is charged based on external transactions (Taylor et al., 2015).
7. The characteristics examined in this study are those that have direct implications on tax planning behaviour, i.e. level of foreign sales, earnings management, gearing, capital intensity, auditor and industry classification, as the characteristics can have implications on tax burden (Abdul Wahab & Holland, 2012, 2015; Ariffin, 2013; Beuselinck & Deloof, 2014; Dharmapala & Riedel, 2013; Dowling, 2014; Frank et al., 2009; Gupta & Newberry, 1997; Hasan, Al-Hadi, Taylor, & Richardson, 2016; McGuire, Wang, & Wilson, 2014). Although there may be potential implications of other factors on tax planning, in particular those that are related to governance and adoption of accounting standards, for example, corporate governance mechanisms and accounting practice between institutional settings, the implications are generally indirect either through "setting the tone at the top" (Dyreng, Hanlon, & Maydew, 2010), for example, CEO preference, or manipulation of organisational structure (Scholes & Wolfson, 1992), for example, IFRS adoption by affiliates (De Simone, 2016). This study is therefore inclined to focus on direct sources of tax planning behaviour, i.e. firm- and industry-specific characteristics of the MNC, to examine the extent that the tax planning is directly company- or industry-specific.

8. Although Rego (2003) has re-estimated the model using MNC sub-sample only, the study has not considered a full range of firm-specific characteristics.
9. This indicatively implies companies with a higher extent of foreign sales, earnings management, leverage, capital intensity and audit fee would engage in a larger extent of tax planning level.
10. Three further categories examined by Abdul Wahab and Holland (2012), the effect of loss relief, tax rate differentials and unclassified items, are not separately examined in this paper because of an apparent lack of consistency in their disclosure over time, for example, only 65% of the observations that reported persistent foreign sales had disclosed overseas tax expense in their annual reports. Instead, these items are included in PD.
11. Seemingly unrelated estimation simultaneously estimates parameters for different components with robust standard errors, which use covariance matrix to correct standard errors across estimation models (Weesie, 1999). SUR procedure is applied given restrictions of OLS to efficiently estimate parameters in different equations for unrelated regressors (Zellner, 1962). In BTD component cases, seemingly unrelated procedure is efficient in estimating unrelated regressors with similar sets of predictors by applying weighted estimate approach and controlling for residual covariance for each PD and TD models (Green, 2012). This is in line with differing nature and influence of tax planning components (Abdul Wahab & Holland, 2012; Raedy, Seidman, & Shackelford, 2011).
12. Following Barth and Kallapur's (1996) suggestion, the model is further estimated using undeflated variables with the inclusion of the scale proxy, i.e. total assets, to test for coefficient bias due to scaling effect. The results are discussed in further tests section.
13. Similar implications are applicable when comparing financial and non-financial sub-samples as the estimators are driven by heterogeneity of reporting regulations. Therefore, in line with previous taxation studies (for example, Abdul Wahab & Holland, 2015; Hasan et al., 2016; Richardson & Taylor, 2015), this study is focusing on non-financial sample to reduce reporting regulation bias in interpreting the findings between financial and non-financial companies.
14. Single-tier system of corporate taxation was implemented from 2008 onwards to replace the imputation corporate tax system.
15. The 2016 Budget Recalibration was announced on 28 January 2016 in which its 53rd item specifies that the government will be more aggressive in clamping down tax dodgers (Ministry of Finance, 2016). The year 2014 is therefore selected to control for the bias of the announcement effect on tax planning measure across the period as the latest 2015 financial report submission date for Bursa Malaysia listed companies is 30 June 2016 given the last date of the company's 2015 accounting year end is 31 December 2015.
16. Outliers were determined using studentised residual > |2|. To investigate potential bias caused by this exercise, estimations using the full sample, 826 firm-years, were

also conducted and the results are qualitatively similar to those using 693 observations.

17. Due to a more detailed classification by the studies, for comparison purpose, industrial product is defined as consisting industrials, oil and gas and basic materials.

18. The weighted mean is calculated using the following formula: $\frac{\sum_{y=1}^{7} \text{BTD}}{\sum_{y=1}^{7} \text{TA}}$. This measure is also applied to weighted PD and TD.

19. Null hypotheses for ANOVA F statistic, Wtest statistic and Levene's test of homogeneity of variance are $H_0: \mu_1 = \ldots = \mu_z$ with assumption of equal variability in the companies, $H_0: \mu_1 = \ldots = \mu_z$ with assumption of unequal variances and unequal means across companies and $H_0: \mu_1^2 = \ldots = \mu_z^2$ with assumption of independence between companies respectively.

20. To control for heteroscedasticity, the models were estimated using a post-estimation procedure, seemingly unrelated estimations (Weesie, 1999).

21. Test of significant differences: FS $\chi^2 = 27.99$ ($p < 0.01$), LEV $\chi^2 = 4.34$ ($p < 0.05$), CAPINT $\chi^2 = 9.81$ ($p < 0.01$), AUD $\chi^2 = 25.40$ ($p < 0.01$), consumer product $\chi^2 = 23.03$ ($p < 0.01$), industrial product $\chi^2 = 49.56$ ($p < 0.01$), infrastructure-project company $\chi^2 = 5.24$ ($p < 0.01$), plantation $\chi^2 = 11.50$ ($p < 0.01$) and technology $\chi^2 = 69.46$ ($p < 0.01$).

22. The lag variables are to reflect the current year assessment effective from 2000, in which the income is assessed in the year when it is deemed to be derived, hence the instrumental variables are exogenous to the BTD. Other factors (for example, corporate culture and business strategy) have also been carefully examined for possibilities to be instrumented in the 2SLS but given their indirect relationship with BTD, these variables do not meet the assumption of uncorrelated instrument with the error term (ε) (Baum, 2006).

23. The F-statistic of the 2SLS is 12.32 ($p < 0.01$) and Sargan test is 2.609 ($p > 0.10$) signifying insignificant issue of overidentifying restrictions.

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