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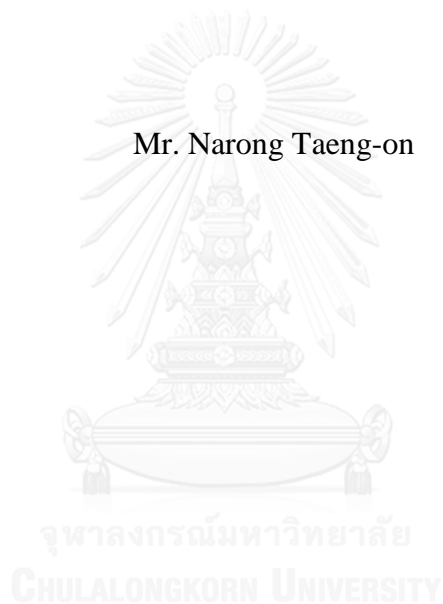
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CORPORATE INCOME TAX PLANNING THROUGH REAL
EARNINGS MANAGEMENT: EMPIRICAL EVIDENCE FROM THAILAND

Mr. Narong Taeng-on



A Dissertation Submitted in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy Program in Accountancy

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งานวิจัยเชิงประจักษ์ฉบับนี้ได้ทำการศึกษาความสัมพันธ์ระหว่างการวางแผนภาษีเงินได้นิติบุคคลและการจัดการกำไรแท้จริง และทดสอบอิทธิพลของบริษัทที่มีลักษณะเป็นบริษัทข้ามชาติและอิทธิพลของบริษัทที่มีผลขาดทุนสุทธิทางภาษียกมาต่อความสัมพันธ์ระหว่างการวางแผนภาษีเงินได้นิติบุคคลและการจัดการกำไรแท้จริง โดยใช้กลุ่มตัวอย่างบริษัทที่จดทะเบียนในตลาดหลักทรัพย์แห่งประเทศไทยในช่วงระยะเวลา พ.ศ. 2554-2557 งานวิจัยนี้ให้คำจำกัดความการวางแผนภาษีเงินได้นิติบุคคลว่าเป็นการทำให้ภาษีเงินได้นิติบุคคลลดลงโดยไม่มีผลกระทบทำให้กำไรทางบัญชีลดลง และศึกษาการจัดการกำไรแท้จริงใน 4 รูปแบบคือ การจัดการกำไรแท้จริงผ่านกิจกรรมขาย การจัดการกำไรแท้จริงผ่านกิจกรรมผลิต การจัดการกำไรแท้จริงผ่านค่าใช้จ่ายในการขายและบริหาร และการจัดการกำไรแท้จริงผ่านการขายสินทรัพย์

ผลการวิจัยพบความสัมพันธ์ระหว่างการวางแผนภาษีเงินได้นิติบุคคลและการจัดการกำไรแท้จริงโดยบริษัทที่มีการจัดการกำไรแท้จริงเพื่อให้กำไรสูงขึ้นมีการวางแผนภาษีเงินได้นิติบุคคลเพื่อลดค่าใช้จ่ายภาษีเงินได้นิติบุคคลที่จะเพิ่มขึ้นเนื่องจากตัวเลขกำไรที่เพิ่มขึ้น ซึ่งความสัมพันธ์ดังกล่าวพบในบริษัทที่มีลักษณะเป็นบริษัทข้ามชาติที่มีการจัดการกำไรแท้จริงผ่านกิจกรรมผลิต และผ่านค่าใช้จ่ายในการขายและบริหาร และบริษัทที่มีผลขาดทุนสุทธิทางภาษียกมาที่มีการจัดการกำไรแท้จริงผ่านกิจกรรมผลิต ผ่านค่าใช้จ่ายในการขายและบริหาร และผ่านการขายสินทรัพย์ จากการทดสอบความแกร่งพบว่าผลการวิจัยไม่เปลี่ยนแปลง

โดยรวมแล้วงานวิจัยนี้นำเสนอความเข้าใจเกี่ยวกับการวางแผนภาษีเงินได้นิติบุคคลและการจัดการกำไรแท้จริงของบริษัทที่มีลักษณะเป็นบริษัทข้ามชาติและบริษัทที่มีผลขาดทุนสุทธิทางภาษียกมา ซึ่งจะเป็นการแจ้งเตือนนักลงทุนผู้ซึ่งใช้ตัวเลขกำไรในการตัดสินใจลงทุน นอกจากนี้ผลของงานวิจัยอาจนำไปสู่การปรับปรุงกฎหมายภาษีอากรในปัจจุบันเพื่อลดการวางแผนภาษีเงินได้นิติบุคคลผ่านช่องว่างของกฎหมายภาษีอากร

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NARONG TAENG-ON: CORPORATE INCOME TAX PLANNING THROUGH REAL EARNINGS MANAGEMENT: EMPIRICAL EVIDENCE FROM THAILAND. ADVISOR: ASST. PROF. PAVINEE MANOWAN, D.B.A., CO-ADVISOR: SANSKRIT VICHITLEKARN, Ph.D., 114 pp.

This empirical research investigates the association between corporate income tax planning and real earnings management of listed companies in Thailand. It also examines the influences of firms' multinational characteristic and tax loss carryforwards on the association between corporate income tax planning and real earnings management. The research samples are listed companies in the Stock of Exchange of Thailand (SET) during the period of 2011-2014. In this research, corporate income tax planning is defined as the ability to lower the corporate income tax expenses without reducing the book income. Specifically, four real earnings management activities are explored: sales manipulation, overproduction, discretionary expenses reduction and the timing of asset sales.

The research findings indicate the association between corporate income tax planning and real earnings management in which firms that engage in real earnings management to manipulate the income upward would undertake corporate income tax planning to mitigate the additional corporate income tax subsequent to the incremental income. The association between both variables is also found in the multinational firms that engage in real earnings management through the production and discretionary expenses cut manipulations; and in firms with tax loss carryforwards engaging in real earnings management through overproduction, discretionary expenses reduction and asset sales manipulation. The results remain unchanged with the robustness tests.

Overall, this research is expected to provide an insight into multinational firms and firms with tax loss carryforwards with regard to corporate income tax planning and real earnings management; and also to contribute to more informed decision-making of investors who rely on the financial reports. Most importantly, it is hoped that the research findings would bring about change in the current tax law so as to discourage or minimize the exploitation of regulatory loopholes through corporate income tax planning.

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CHATER I

INTRODUCTION

This empirical research investigates the association between real earnings management and corporate income tax planning of listed companies in Thailand during 2011-2014. It also explores the influence of firms' multinational characteristic on the association of real earnings management and corporate income tax planning; and the impact of tax loss carryforwards on the association of real earnings management and corporate income tax planning¹. In addition, this study focuses on four types of real earnings management (REM) activities: sales manipulation, overproduction, discretionary expenses reduction, and sale of fixed and investment assets.

Corporate income tax typically accounts for 20-30% of the net income before taxes for most businesses, and at the same time the business tax receipts is an important source of state revenues. The conflict of interest often occurs between corporate taxpayers and tax authorities as the former endeavor to minimize the tax payment through tax planning while the latter strive to maximize the tax collection. In selecting an optimal level of corporate income tax planning, businesses would weigh the marginal benefit of tax planning against the marginal cost. The marginal benefits include corporate tax expense savings, increased net income, and larger operating

¹ In this research, “corporate income tax avoidance” is used interchangeably with “corporate income tax planning” due to their interconnectedness.

cash flow amounts, whereas the marginal costs include the implementation cost, the transaction cost, and the consultation fees.

Despite the accompanying costs, tax consulting services offered by accounting audit firms have witnessed a steady growth in demand in recent years. In 2014, Pricewaterhouse Coopers (PWC) reported that its revenues from tax services rose 8 percent (www.pwc.com), indicating a significant increase in the adoption of tax planning among businesses. This is consistent with McGuire et al. (2012), who documented that firms engaging the tax consulting services exhibited lower corporate income tax payments. Moreover, tax planning is normally viewed as legitimate and thus less susceptible to the tax-evasion penalty.

According to Tsakumis et al. (2007), Thailand's tax evasion score was 53.34, the third highest among 50 countries studied, where the higher the score the higher the incidence of tax evasion. In comparison with other Southeast Asian countries in the same study, i.e. Indonesia (21.37), the Philippines (44.50) and Singapore (13.40), Thailand topped the rankings. To address the issue, the National Reform Council of Thailand has embarked on a reform to close the loopholes in the current tax laws. Some of the propositions by the Council to discourage the tax planning practices include the anti-tax avoidance rules, improved transfer pricing rules, and stricter thin capitalization rules.

On the topic of real earnings management, (Roychowdhury 2006; Cohen et al. 2008) reported that businesses tend to structure their operation, investment, or financial transactions (i.e. engaging in real earnings management) to boost the reported income numbers. In addition, the stricter regulations and streamlined financial auditing process contribute to firms' alternating between accrual earnings management and real earnings management. The tradeoff between the two methods is dictated by their relative cost (Zang 2011). By comparison, real earnings management is more preferable, especially under the stringent accounting standards or regulations (Ewert and Wagenhofer 2005), because the real earnings manipulation is less likely to be detected by the auditors and regulators (Graham et al. 2005).

As previously mentioned, the stricter regulations and the streamlined audit procedure intended to limit accrual earnings management could inadvertently encourage firms to switch to real earnings management to accelerate the reported income. According to (Bartov 1993; Cohen et al. 2008; Herrmann et al. 2003; Roychowdhury 2006), businesses have a tendency to engage in real earnings manipulation to meet the earnings target. In Thailand, accrual earnings management is adequately constrained as Thailand's Securities and Exchange Commission (SEC) and the accounting professional body constantly upgrade the audit standards to be in line with the international practice. The action nonetheless causes a large number of listed firms in Thailand to trend to switch to real earnings management.

The attempt to boost the earnings however often contributes to a rise in the tax expenses and the subsequent lower after-tax profit. To circumvent, the management whose incentives are tied to the stock prices or the income performance would adopt the synchronous strategy, whereby the income is manipulated upward while the taxable income downward through corporate tax planning. In other words, firms that utilize both real earning management and income tax planning to achieve the income target would experience the increase in tax payment in a much smaller proportion to the increased income. Thus, it is of interest to investigate the association between real earnings management and corporate income tax planning.

Unlike domestic-only firms, multinational firms are presented with greater flexibility with regard to corporate income tax planning through their foreign subsidiary, resulting in the lower corporate income tax payment. Moreover, a large number of multinational corporations are opportunistic by concealing from tax authorities their operations using the subsidiary businesses. This is consistent with Rego (2003), who reported that U.S. multinational firms paid lower corporate income taxes than did the only-domestic firms. According to Beatty and Harris (2001), subsidiary businesses are a strategic tax planning tool to reduce the consolidated corporate income tax. In short, multinational firms are more likely to engage in tax planning to minimize the corporate income tax cost.

In response to globalization and ease of capital movement, an increasing number of Thai companies have expanded their operations overseas. By the end of 2015, a total of 192 Thai listed firms, accounting for 37 percent, had their operations

in the foreign markets. Of the total 192 firms, as many as 40 firms are SET100 firms (Nithichai 2016). The direct overseas investment offers the investing firms with opportunities to take advantage of lower corporate income tax rates, whereby the income could be shifted from a higher tax to a lower tax country. For instance, given a 20% domestic tax rate and a lower tax rate in the country where the subsidiary is located, the parent firm would not export the goods directly to its clients but instead transfer the finished goods or raw materials at a significantly low price to its subsidiary and then to the ultimate customers. Another example of tax planning concerns the intercompany service charges where a business in a lower tax environment charges another business unit subjected to a higher tax rate at an exorbitant price. With greater flexibility with regard to tax planning to reduce the tax cost, the multinational firms' engaging in real earnings management would less likely result in a significant increase in the corporate income tax payment. It is of interest to examine the influence of firms' multinational characteristic on the association between real earnings activities and corporate income tax planning.

For firms with tax loss carryforwards, the rise in incomes would not translate into an increase in income tax payment due to the offsetting effect of the tax loss carryforwards. According to Christie and Zimmerman (1994), firms with tax loss carryforwards tend to adopt an income-increasing inventory method for the reason that the earnings management activities rarely result in the increase in the corporate income tax cost. Interestingly, real earnings management in the form of sales manipulation and overproduction is limited in usefulness for firms with tax loss carryforwards because both manipulation methods adversely affect the operating cash

flow and the long-term financial health. On the other hand, the discretionary expenses reduction strategy would be more suitable for firms with tax loss carryforwards. It is also of interest to examine the influence of tax loss carryforwards on the association between real earnings management and corporate income tax planning.

The findings of this empirical research have revealed that real earnings management through discretionary expenses reduction and asset sales is significantly associated with corporate income tax planning. In other words, the Thai listed companies that engaged in the real earnings management activities utilized the tax planning to increase the reported income and at the same time to lower the tax cost. Further investigations reveal the influence of firms' characteristics, i.e. multinational firms and firms with tax loss carryforwards, on the association of the two variables. Specifically, the tax planning motivations are intensified for the multinational firms and firms with tax loss carryforwards.

The findings indicate the influence of firms' multinational characteristic on the association between corporate income tax planning and real earnings management through overproduction and discretionary expenses reduction, suggesting that the multinational firms engaged in these real earnings manipulations to take advantage of the greater tax planning flexibility to lower the corporate income tax cost. Moreover, the research results demonstrate the effect of tax loss carryforwards on the association between corporate income tax planning and real earnings management through overproduction, reduced discretionary expenses and the timing of asset sales. The findings substantiate the hypothesis that firms with tax loss carryforwards deliberately

engage in the suboptimal operations and corporate income tax planning to manage the net profits. In fact, firms with tax loss carryforwards that engage in real earnings management activities to manipulate the income upward pay a lower effective tax rate since the tax loss carryforwards could be used to offset the additional income, resulting in a lower taxable income payment.

1.1 RESEARCH OBJECTIVES

The objectives of this research are threefold: first, to examine the association between corporate income tax planning and real earnings management; second, to examine the influence of firms' multinational characteristic on the association between corporate income tax planning and real earnings management; and, third, to examine the influence of tax loss carryforwards on corporate income tax planning and real earnings management.

1.2 CONTRIBUTIONS

It is expected that the research findings would contribute to the recent publications on real earnings management (Roychowdhury 2006; Cohen et al. 2008; Zang 2011) and corporate income tax (Frank et al. 2009; Dyreng and Lindsey 2009). In particular, Frank et al. (2009) documented that firms that engage in the *accrual* manipulation activities would utilize corporate income tax planning. Meanwhile, this current research investigates whether Thai listed firms used real earnings management and corporate income tax planning to achieve the earnings target. Furthermore, this

research explores the influence of firms' characteristics, i.e. multinational firms and firms with tax loss carryforwards, on the association between real earnings management and corporate income tax planning.

In addition, the research findings are expected to contribute to more informed investment decisions among equity investors because the utilization of real earnings management and corporate income tax planning influences the quality of firms' earnings. In other words, firms that engage in either real earnings management or corporate income tax planning or both could face a declining future performance. Furthermore, some tax planning activities are less legitimate and could result in the tax-related penalty.

Moreover, in line with the internationalization of many Thai firms, the research findings would be a wakeup call to the Thai tax authorities that a revamp to the current tax laws is urgently required to discourage corporate income tax avoidance and curb the tax planning exploitation.

The rest of this dissertation is organized as follows: Chapter II deals with the literature review and hypothesis development. Chapter III details the research design, including the sample selection, data, variable measurement, and model specification, and Chapter IV discusses the empirical results. The conclusions, limitations and suggestions for future research are provided in Chapter V.

CHAPTER II

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 INSTITUTIONAL BACKGROUND

Under the current Thai tax law, a company registered under Thai law is subject to the worldwide income tax system. By contrast, a foreign-registered company in Thailand is taxed on the income generated in the Kingdom. In Thailand, the accounting period income is adjusted in accordance with the conditions stipulated in Section 65 *bis* and 65 *ter* of the Revenue Code to compute the taxable income. The accrual basis of the generally accepted accounting principles is applied in the computation of taxable income. Nonetheless, other calculation methods can be utilized for certain types of income, e.g. hire-purchase, installment sale, construction, sale of immovable properties, and golf course.

Under the Revenue Code, the dividends from a limited company registered under Thai law are tax-exempt provided that the shareholding is in full compliance with the stipulations. In addition, some foreign entities are eligible for tax exemptions under the transnational tax treaties. Moreover, corporation tax exemptions for a period of 3 to 8 years are granted under the Investment Promotion Act to attract new investments. The exemptions could cover the dividends, goodwill fees, copyright or other rights royalties received by individuals from the promoted businesses.

Generally, expenses arising from the business activities to generate income are tax deductible. However, certain expenses as specified in Section 65 *ter* of the Revenue Code are not allowed as expenses to calculate the taxable income. Furthermore, the deduction of certain other expenses must comply with the stipulations in the Revenue Code. Examples of such expense items are bad debts that are written off in accordance with the ministerial regulations, and the depreciation amount that exceeds the rates specified in the Royal Decree issued under the Revenue Code (No. 145). In addition, under the Revenue Code, the deduction of actual entertainment expenses shall not exceed 0.3% of total gross revenue or gross sales, or of the paid-up capital, whichever is greater and shall not exceed 10 million Thai baht. Donations to public charities and/or for education or sports of in excess of 2% of net profits shall not be deducted. The operating losses may be carried forward up to five accounting periods to offset against the future profits but no loss carryback is allowed.

Section 65 *ter* of the Revenue Code also lists non-deductible expense items. Such items include personal expenses and gifts, tax penalties, surcharges and criminal fines under the Revenue Code. Any artificial or fictitious expenses are not allowed. Consideration for properties owned and used by the juristic entity and interest on capital cannot be deductible. The reserves or funds of the juristic entity, and any damages recoverable under an insurance or contract of indemnity are nondeductible items. A disbursement could be nondeductible if the identity of its recipient cannot be proved by the payer. The portion of the purchase price of properties and the expenses in connection with the purchase or sale of properties which exceeds a reasonable amount are nondeductible.

In Thailand, the corporate income tax rate was reduced from 30% to 23% in 2012 and again to 20% in 2013. Corporations are required to self-assess and file a corporate income tax return within 150 days of the last day of the accounting period. To ensure compliance, the Revenue Department regularly conducts business operation visits/tax investigations to review major issues, and comprehensive tax audits. The burden of proof lies with the taxpayers.

The legitimacy of tax planning is largely dictated by a country's norms and attitudes toward the practice. In Thailand, the norms and attitudes with regard to tax planning are mixed partly because the current Revenue Code defines only tax evasion as illegal. In other words, tax planning could be construed as legitimate as long as the action does not contradict the tax law.

Under Section 37 of the Revenue Code, the intentional notification of false statement or giving false statement or answering with a false statement or showing false evidence by faulty facts, fraudulent, artifice or other similar nature in order to evade taxes shall be subject to an imprisonment term of 3 months to 7 years or a fine of 2,000 to 200,000 Thai baht or both. In addition, Section 37 *bis* stipulates that the intentional failure to file tax in order to evade or in an attempt to evade tax shall be subject to a fine of not exceeding 5,000 Thai baht or an imprisonment term not exceeding 6 months or both. Interestingly, both Sections 37 and 37 *bis* impose the penalty on tax evasion but not on tax avoidance. Thus, as long as a transaction is in accordance with the tax law, it is a deductible item despite the fact that the transaction

is specifically structured for tax purposes. It could infer that tax planning including tax avoidance activities is legitimate and acceptable under Thai tax law.

At present, no anti-tax avoidance and specific transfer pricing provisions exist under the current Revenue Code. The Revenue Department instead issued Departmental Instruction (DI) No. Paw 113/2545 for use as the transfer pricing guidelines. The purpose is to assist taxpayers in setting arm's length prices for the transactions with related parties and the tax officers in reviewing taxpayers' transfer prices. Nevertheless, the guidelines lack the clear definitions of market price and independent contracting parties to determine in good faith in the case of a transfer of goods, provision of services or lending of money.

To discourage tax avoidance practices, the Cabinet approved a draft Act on Revenue Code Amendment in May 2015, whereby specific transfer pricing provisions are introduced into the existing Revenue Code. One provision requires that the transfer pricing disclosures be made within 150 days of the year-end closing date (same deadline as corporate income tax returns) and the failure to comply would result in a penalty of not exceeding 400,000 Thai baht. However, attempts to combat tax avoidance undertaken by multinational firms in the country have achieved little success because Thailand is not a member of the Organization for Economic Cooperation and Development (OECD). The non-member status prevents Thailand access to tax information of other OECD countries, making the efforts to limit tax avoidance by multinational firms more difficult.

2.2 CORPORATE INCOME TAX PLANNING

Income tax planning is occasionally referred to by a different nomenclature, including tax shelter, tax avoidance, tax management, tax mitigation and tax aggressiveness. The Thai Ministry of Finance defines tax planning as the arrangement of a business to minimize the tax burden as permissible under the tax law. According to Tantiyavarong (2009), corporate income tax planning refers to the reduction of corporate income tax expense involving the first-order effect of tax planning and the second-order effect of business policy and accounting practices. Tax planning could take the form of *book-tax nonconforming tax planning* whereby the savings on corporate income tax is achieved without a decline in book income; or *book-tax conforming tax planning* where both book income and corporate income tax expense are reduced. In this current research, the sampled firms are listed companies and thus are unlikely to adopt the book income-decreasing method to reduce the corporate income tax for fear of falling stock prices. Therefore, the corporate income tax planning relevant to this empirical research is the *book-tax nonconforming tax planning* scheme, where the savings of corporate income tax is realized without a decline in book income.

The term “tax avoidance” is often used interchangeably with “tax planning” due to their connectedness. In fact, tax avoidance emphasizes the reduction in explicit tax costs while tax planning is more comprehensive. In addition to the explicit tax costs, implicit tax costs (e.g. reduced pre-tax rate of return for tax-favored investment) and other non-tax costs (e.g. the agency cost, transaction cost and financial reporting

cost) could considerably influence the net effective income tax of a business (Lietz 2013).

Interestingly, prior studies have used the effective tax rate and cash effective tax rate metrics to measure the levels of corporate income tax avoidance and corporate tax planning. In other words, the effective tax rate and the cash effective tax rate are utilized as the proxies for corporate income tax avoidance. Hope et al. (2013) used both metrics to investigate the effects of geographic earnings disclosures on tax avoidance. Dyreng et al. (2010) employed the effective tax rate and cash effective tax rate metrics to determine the association between executive characteristics and corporate income tax avoidance.

Other studies have used both metrics as the proxies of corporate income tax planning. Armstrong et al. (2012) identified firms' incentives to engage in tax planning using the effective tax rate and the cash effective tax rate as the proxies of corporate income tax planning. Tantiyavarong (2009) examined the determinants of corporate income tax planning and the association between corporate income tax planning and firm value of listed companies in Thailand using the effective tax rate as the measure of corporate income tax planning. Thanjunpong (2014) used the effective tax rate as the measure of corporate income tax planning in the examination of the impact of good corporate governance on tax planning of the SET-listed companies. In essence, corporate income tax planning and corporate income tax avoidance are similar in the construct of measurement. Furthermore, the ultimate goal of corporate income tax planning and corporate income tax avoidance is to reduce the total

corporate income tax. Thus, this current research is principally predicated on existing studies on corporate income tax avoidance.

According to (Hanlon and Heitzman 2010), the principal and agent framework would offer an insight into the incentives of the related parties, e.g. managers, shareholders and tax authorities, given the involvement of multiple parties in the corporate tax reporting process. Specifically, in the shareholders' view, a higher corporate income is a measure of the investment worthiness, while the tax authorities perceive the higher income to be synonymous with more tax receipts. To boost the income, managers alone, or in collaboration with the shareholders, engage in earnings management. The additional income normally brings about the additional corresponding income tax outlays, providing an incentive to implement the income tax planning to *subdue* the effect of income growth. Interestingly, the stricter tax law and corporate governance are inversely correlated with the managers' propensity to engage in tax planning.

According to the agency theory, both the managers and shareholders act out of self-interest. In the event of the incompatible goals, the managers often adopt a course of action that is unnecessarily aligned with the owners' best interests. For instance, a contract with the earnings-based compensation would induce the manager to pursue the course of action that maximizes his own interest rather than the owners'. Fortunately, since corporate income tax planning usually increases the after-tax firm value, the manager would also benefit if his compensation is tied to the net income. Interestingly, the shareholders might prefer that the manager not engage in corporate

tax avoidance for fear of reputation damage and other hidden costs. This is consistent with (Badertscher et al. 2013; Chen et al. 2010b), who reported that the concentration of ownership could mitigate the level of corporate tax avoidance.

Furthermore, Desai and Dharmapala (2006) reported that, based on the agency theory, the incentive compensation appears to be a significant determinant of tax avoidance activity. Armstrong et al. (2012) documented an association between the incentive compensation of tax directors and corporate tax planning (proxied by the effective tax rate) such that the performance-based compensation motivates the managers to strive to lower the tax expenses in the financial statement.

Previous studies documented firms' characteristics that influence the levels of firms' corporate income tax planning. According to Chen et al. (2010b), the family-owned firms were less-avoidance with regard to the corporate tax than were the non-family-owned firms, suggesting that the former were more concerned with the penalty and reputation harm. The result implies that the family-owned firms are less likely to engage in tax planning to reduce the corporate income tax. According to Edwards et al. (2013), firms under the financial constraints exhibited more corporate income tax planning. This is attributable to the high cost of the external funding; forcing these firms to seek funds from the cash savings through the corporate income tax planning activities. According to Khurana and Moser (2010), the greater the proportion of institutional ownership, the lower the corporate income tax expenses. This is because the institutional shareholders tend to focus on the short-term results and thereby forces the managers to boost the near-term earnings. Minnick and Noga (2010) documented

that corporate governance plays a role in corporate income tax planning such that companies with different corporate governance structures choose different corporate income tax planning strategies.

Regarding the consequences of corporate tax planning, Katz et al. (2013) documented that the corporate income tax-mitigating firms were faced with the lower future profitability vis-à-vis the non-tax avoidance firms. Kubata et al. (2013) found that corporate tax planning was significantly negatively associated with the earnings informativeness, as measured by the earnings response coefficient (ERC). The finding implies that investors attach lower informational relevance to the incremental earnings, which will be passed on to the tax authorities (i.e. in the case of “unsuccessful” tax avoidance).

2.3 REAL EARNINGS MANAGEMENT

Earnings management occurs when the manager arbitrarily alters the financial report or structures the transactions in order to either mislead the stakeholders about the underlying economic performance or influence the contractual outcome (Healy and Wahlen 1999). Earnings management can be classified into two categories: accrual and real earnings management (Gunny 2010). Accrual earnings management involves altering the accounting methods or the estimation of a given transaction, while real earnings management involves deviating the timing or structure of operating, investment or financial activities from the optimal business operation. The current accounting standards and regulations could adequately curb with accrual

earnings management but not with real earnings management. Evans et al. (2014) reported that American firms chose the real over accrual methods because the U.S. GAAP facilitates the detection of accrual earnings management and the enforcement is efficient in the U.S. Chi et al. (2011) noted that the incidence of real earnings management rose in conjunction with the improved audit quality. Cohen et al. (2008) documented that the passage of the Sarbanes-Oxley Act (SOX) in 2002 results in a significant shift from accrual earnings management to real earnings management.

Ewert and Wagenhofer (2005) defined real earnings management as the alteration of timing or structure of transactions to intentionally influence the earnings, resulting in a deviation from an otherwise optimal plan of actions. According to Roychowdhury (2006), real earnings management is a departure from the normal operation practice, motivated by managers' desire to mislead the stakeholders into believing that certain financial goals have been met in the normal course of operation. Specifically, real earnings management can be defined as the structured business activities undertaken by managers to manipulate the reported earnings numbers.

The commonly adopted real earnings management activities include sales manipulation, overproduction, reduction of discretionary expenditure, and asset sales (Roychowdhury 2006; Cohen et al. 2008; Gunny 2010). Through sales manipulation, firms accelerate the timing of sales with price discount offers and/or attractive layaway plans. In other words, the future sales are manipulatively shifted to the current period. Sales manipulation in fact produces a lower operating cash flow in the current period relative to the increased sales level. When the sales promotion

campaign ends, the additional sales quickly disappear and the promotion likely misleads the customers to expect a similar discount in the future. Jackson and Wilcox (2000) noted that businesses often offer a price discount for their products in the fourth quarter to meet the annual financial target. Roychowdhury (2006) documented that, to avoid reporting annual losses and the subsequent debt covenant violation, firms would launch a sales promotion campaign to accelerate sales, engage in overproduction to reduce the cost of goods sold, and/or tighten the discretionary spending to improve the margins.

Firms could deliberately produce goods in excess supply since overproduction contributes to the lower unit fixed cost. As long as the lower unit fixed cost is greater than the incremental unit marginal cost, the total cost per unit will continue to decline. The overproduction strategy decreases the cost of goods sold and thus increases in the operating margins. The strategy nevertheless contributes to increases in other production-related costs and the holding cost, which eventually leads to the higher overall production cost relative to sales and the lower operating cash flow. According to Gunny (2010), firms engage in overproduction to lower the cost of goods sold and meet the earnings target. Gupta et al. (2010) reported that the overproduction of high-manufacturing-overhead firms is driven by opportunistic earnings management incentives. Young et al. (2013) documented that firms under the accrual earnings management constraints and the pressure to boost income would likely overproduce following the adoption of SFAS No. 151. Under the SFAS No.151, the allocation of fixed production cost to the conversion cost is based on normal capacity, and the unallocated fixed overhead is recognized as an idle facility expense in the current

period rather than capitalized as a production cost when the production volume lower normal level. To avoid a decline in earnings due to the idle expense recognition, firms may overproduce to reach the normal capacity to defer this expense.

Through the reduction of discretionary expenditures, firms may cut or postpone the spending on, e.g. research and development, advertising or maintenance. This is more likely to happen when these expenditures do not directly or materially generate income in the current period. According to (Phattaranawig 2012), the discretionary expenditures cut, e.g. training expenditures intended to increase human capitalization, advertising expenses to enhance brand royalty, or the R&D spending to increase competitiveness, affects the long term performance of firms. However, the reduction or postponement of these discretionary expenses lowers the sale and administrative expenses relative to sales in the current period. (Baber et al. 1991) reported that firms undertake a R&D spending cut when under the pressure to report the positive earnings in the current period. Dechow and Sloan (1991) documented that top management invest significantly less in the R&D activities during their final years in office, suggesting that the earnings-based incentives induce the manager to reduce the discretionary spending to boost the short-term performance. According to Gunny (2010), firms opt for cuts in the research and development expenditure and the selling, general and administrative expenses to meet the earnings target.

For the asset sales, in the event that the asset's market value is higher than the book value, managers are presented with an earnings management choice because the gains are reported in the income statement at the time of sale. The engagement in

earnings management is more likely if the assets in question do not involve directly in generating income (i.e. non-operating assets) and their disposal (sale) has little impact on the firm's operation. These assets usually are properties investment, long-term investment and investment in subsidiaries. According to Bartov (1993), managers sell fixed assets to avoid negative earnings growth and debt covenant violations. Herrmann et al. (2003) reported that Japanese managers utilized the income from the sale of assets to manage the earnings, and that the level of earnings manipulation through the sale of fixed assets and marketable securities increased (decreased) when the actual operating income was below (above) the forecast.

In short, firms have incentives, either capital market or compensation incentives, to engage in real earnings management to increase the short-term earnings. The implementation of real earnings management strategies could contribute to an abnormally low operating cash flow under the sales manipulation scheme, an abnormally high production cost under the overproduction strategy, an abnormally low discretionary expense if such expenses are reduced, or an abnormally high gain from the disposal (sale) of assets if the timing of the asset sale is accelerated.

The extant studies discovered that firms engaged in real earnings management to actualize the profitability goals. Zang (2011) documented that managers use real earnings management and accrual-based earnings management as substitutes. In other words, the managers trade off the two earnings management methods based on their relative costs and adjust the level of accrual-based earnings management according to

the realized level of real activity manipulation. Nevertheless, the effects of real earnings management activities on firms' future performance are inconclusive.

Chen et al. (2010a) reported that the future performance of firms adopting real earnings management to meet analysts' forecast outperformed those implementing either only accrual earnings management or both accrual and real earnings management. The finding is consistent with the signal theory, in which managers are confident in the future performance and that the future earnings growth outweighs the cost of engaging in real earnings management. Cohen et al. (2008) found that the seasoned equity offering firms that engage in real earnings management experienced a decline in the future performance, consistent with the opportunistic theory, in which managers would deploy the real earnings activities for the sole purpose of boosting the current income. In addition, Kim and Sohn (2013) found a positive association between the cost of capital and real earnings management activities, controlling for the effect of the accrual-based earnings management. This finding suggests that the real earnings management activities diminish the quality of earnings information as perceived by the investors, and thus the capital market demands a higher risk premium for these manipulative activities.

2.4 MULTINATIONAL FIRMS AND CORPORATE INCOME TAX PLANNING

Unlike only-domestic firms, multinational firms are presented with greater opportunity to shift the income from a higher tax to a lower tax rate jurisdiction, resulting in a lowering of the consolidated tax expenses. The lower income tax payment could be realized through transfer pricing, by exploiting the differences between the tax rules of different countries, by taking advantage of tax subsidy agreements with host countries, and by engaging in complex property transactions, including basis shift transactions under tax law (Rego 2003).

The multinational firms could opt against a neutral application of the arm's length price principle in setting the prices of goods and services transferred among the entities located in different jurisdictions, thereby allowing them to shift the marginal income to the lower tax rate location. Furthermore, the multinational firms could shift profits using the intra-company debt, whereby a subsidiary located in a lower tax rate country lends to the another subsidiary in a higher tax rate country. That way, the interest revenue is taxed at the lower tax rate while the interest expense is deductible at the higher tax rate, giving rise to a lower consolidated tax expense.

According to Rego (2003), multinational firms in the U.S. paid lower corporate income tax than did the only-domestic corporations. Overesch (2006) reported that multinational corporations transfer income through intra-firm sales from the high tax to low tax countries despite the anti-tax avoidance legislations and tax

audits based on the arm's length principle. (Beatty and Harris 2001) documented that banks use their subsidiaries as a strategic tool to lower the consolidated tax expenses. Specifically, members of the consolidated banking groups shift the gain recognition to the lower-taxed group members and away from the higher-taxed group members. Dyreng and Markle (2016) reported that the financially constrained firms transfer smaller amounts of income out of the U.S. into their foreign jurisdictions than do their unconstrained peers.

2.5 TAX LOSS CARRYFORWARDS AND CORPORATE INCOME TAX PLANNING

Generally, firms are allowed under tax laws to offset tax loss carryforwards against the future taxable income. Thus, tax loss carryforwards could represent a substantial asset for firms and signal the firms' ability to generate the offsetting taxable income. The International Accounting Standard (IAS 12 Income Taxes) stipulates that a deferred tax asset shall be recognized for the carryforward of unused tax losses to the extent that it is probable that the future taxable profit will be available, against which the unused tax losses can be utilized. Specifically, tax loss carryforwards afford firms with opportunities to take advantage of corporate income tax planning to reduce the corporate income tax payment. In addition, the timing of the recognition of tax loss carryforwards could be deployed by the managers to manipulate the net income. In other words, given that the consolidated net income meets or exceeds the earnings target, the management might postpone the recognition a later period.

According to Christie and Zimmerman (1994), firms with tax loss carryforwards have a propensity to implement an income-increasing inventory method. McGuire et al. (2016) documented that investors assign a positive value to increases in firms' tax loss carryforwards, given the latter's frequency of tax avoidance. This suggests that the firms' prior tax avoidance behavior contains unique information about the likelihood that the loss-carryforwards benefits would be realized.

Under Thai tax law, the net tax loss is allowed to carry forward up to five years. Meanwhile, the tax loss carryforwards associated with the tax-exemption activities under the Board of Investment of Thailand are allowed up to five years up until the end of the tax-exemption promotion period. Interestingly, most listed companies in Thailand prefer to not recognize the deferred tax asset from tax loss carryforwards but to report of an uncertainty of future income to offset the tax loss carryforwards.

2.6 HYPOTHESIS DEVELOPMENT

The decision to engage in corporate income tax planning is largely governed by the tradeoff between the costs and benefits. The most obvious benefit of corporate income tax planning is tax savings resulting and the subsequent increase in the after-income tax and the operating cash flow. The higher net income leads to a higher executive compensation and also boost the stock prices. Despite the higher profitability, corporate income tax planning entails the expenditure of resources in the

implementation, including the transaction costs, implicit taxes and uncertainty (Minnick and Noga 2010). However, as long as the tax savings from planning outweigh the associated costs of executing the planning, firms will engage in tax planning. Graham et al. (2013) reported that as many as 57 percent of public firms claimed that the increased earnings per share were attributable to the strategic corporate tax planning.

The importance attached to the earnings numbers by equity investors and analysts when it comes to evaluating the firm's performance constitutes an incentive that drives the managers to engage in the earnings manipulation in an attempt to influence the near-term stock prices. According to Perry and Williams (1994), firms resorted to earnings management practices prior to a management buyout. Cohen and Zarowin (2010) provided evidence that firms normally engaged in real earnings management activities in the run-up to the seasoned equity offerings.

In addition, to meet the earnings target, firms have been found to adopt either the accrual or real earnings management strategy. According to Zang (2011), managers based their selection of one earnings management method over the other on their relative costs. Specifically, in the event that the costs of the real earnings management activities turn out to be unexpectedly high (low), the managers would then increase (decrease) the amounts associated with the accrual-based earnings management activities. Graham et al. (2005) conducted a survey and found that the managers preferred the real earnings management activities to the accrual-based

earnings management practices due to the fact that the former are faced with the lower likelihood to be scrutinized by the auditors and regulators.

To determine the levels of tax planning, this empirical research has utilized the effective tax rate and the cash effective tax rate metrics, as respectively calculated by the total tax expense and the cash tax paid divided by the net income (earnings) before tax. The interpretation is that the lower the effective tax rate or the cash effective tax rate, the more tax planning the firm utilizes. Specifically, firms engaging in real earnings management to manipulate the income upward offset the ensuing higher tax cost through the corporate tax planning practices to “*suppress*” their taxable income. These metrics capture the firms’ savings on corporate income tax expenses while maintaining the book income. The effective tax rate is sometimes used by tax authorities as a measure of tax compliance and this requires examination of the relationship between the tax and financial accounts.

Corporate income tax planning and earnings management typically take place in a concurrent fashion. This is because the tax expense item is among the last accounts closed in the earnings reporting and thus represents an opportunity for earnings management. According to (Dhaliwal et al. 2004), when earnings management alone is insufficient to achieve the income target, managers, given the earnings-based incentive compensation, would adopt the tax planning strategies to boost the book income while minimizing the taxable income.

For this reason, corporations tend to engage in corporate income tax planning in conjunction with earnings manipulation to optimally realize the earnings target. Frank et al. (2009) found a strong positive correlation between aggressive corporate income tax planning and the aggressive financial reporting (proxied by accrual earnings management). The finding implies that the managers adopted the accrual earnings manipulation together with corporate income tax planning to achieve the earnings target.

Typically, when firms engage in real activities to increase the book income, they also increase the taxable income and incur higher tax costs in the current period. However, real earnings management undertaken by firms with effective tax planning unnecessarily raises the corporate income tax cost significantly because these firms would manage the additional corporate income tax through tax planning to “suppress” the rise in the corporate tax expense.

Essentially, firms that attempt to accelerate the sales revenue through price discount offers and/or attractive layaway plans often encounter the situation of abnormally low operating cash flow due to the lower cash inflow per sales transaction. The abnormally low cash flow from the operation could thus be indicative of the firms’ engaging in the real earnings management activity (i.e. the sales manipulation). Nonetheless, the accelerated sales revenue (achieved through the sales manipulation) contributes to an increased before-tax earnings and thus entices the firms to adopt the corporate income tax planning practices. It is thus hypothesized that:

Ha₁: The abnormal cash flow from operation is associated with the greater use of corporate income tax planning.

Through the overproduction strategy, firms would deliberately manufacture the products in excessive supply in order to reduce the unit fixed cost and the subsequent cost of goods sold. Nevertheless, the cost of production and the holding cost would rise under this scheme, eventually leading to the abnormally high aggregate production cost. Specifically, in the event that firms embrace both the overproduction and corporate tax planning practices, it is thus possible to hypothesize that:

Ha₂: The abnormal production cost is associated with the greater use of corporate income tax planning.

To manipulate the earnings upward through the reduction of discretionary expenses, businesses could either delay or slash the spending on, e.g. advertising, research and development, and selling and administrative expenses, during the current period. If firms engage in both the discretionary expenses cutting and tax planning practices, it could thus be hypothesized that:

Ha₃: The abnormal discretionary expenses are associated with the greater use of corporate income tax planning.

The manipulation of earnings through the timing of asset sales is realized by selectively disposing of (selling) the fixed or investment assets whose book values are substantially below the market prices. The practice inevitably contributes to the abnormally higher gains from the sale of the assets and the motivation to embrace tax planning. It could thus be hypothesized that:

Ha₄: The abnormal gain on asset sales is associated with the greater use of corporate income tax planning.

It is expected that the association between corporate income tax planning and real earnings management would be more pronounced for multinational firms. This is attributable to the fact that the multinational, vis-à-vis the only-domestic counterparts, are presented with greater flexibility with regard to income tax planning, including the income shifting from a higher tax rate to a lower tax rate country through transactions among subsidiaries. In addition, the inter-subsidiary transactions are subject to less scrutiny by tax authorities due to the unavailability of tax information outside of the home country. It is thus likely that the benefits of corporate income tax planning undertaken by multinational firms far outweigh the associated potential costs.

Specifically, the multinational firms would embark on corporate income tax planning to manage (suppress) the incremental income associated with a sales promotion campaign (i.e. sales manipulation). This is consistent with Overesch (2006), who reported that multinational corporations transfer incomes through intra-

firm sales from a high tax to a low tax country and thus lower the income tax cost. Therefore, it could be hypothesized that:

Hb₁: Firms' multinational characteristic influences the association between the abnormal cash flow from operation and the greater use of corporate income tax planning.

Multinational firms typically establish a foreign subsidiary to take advantage of tax holiday or lower tax rates under an investment promotion. The multinational firms intended on boosting the reported income through overproduction and at the same time undertaking corporate income tax planning would prefer a foreign subsidiary with a lower tax rate and idle capacity. The profit margins would thus increase without a significant rise in the corporate income tax cost. It could thus be hypothesized that:

Hb₂: Firms' multinational characteristic influences the association between the abnormal production cost and the greater use of corporate income tax planning.

Multinational firms under the pressure to report a higher rate of return tend to undertake the discretionary expenses cut first with the subsidiary located in a lower corporate income tax as long as the action does not impact the current operation. It is thus hypothesized that:

Hb₃: Firms' multinational characteristic influences the association between the abnormal discretionary expenses cut and the greater use of corporate income tax planning.

For the asset sales manipulation, the gains on fixed asset sales could be manipulated to take advantage of corporate income tax planning. In other words, multinational firms could boost the income through asset sales by selling the fixed assets and/or investment of a foreign subsidiary located in a lower tax rate country and thus the corporate income tax cost would minimally increase. It is thus hypothesized that:

Hb₄: Firms' multinational characteristic influences the association between the abnormal gains from asset sales and the greater use of corporate income tax planning.

For firms with tax loss carryforwards, engaging in real earnings management is less likely to result in additional corporate income tax because these firms could strategically use the tax loss carryforwards to offset the increased income. Christie and Zimmerman (1994) found that firms with tax loss carryforwards employ the income increasing strategy to manipulate the reported income for the reason that these firms intend to use the tax loss benefit to reduce the taxable income and thus realize the net income target and tax cost savings. The finding implies that tax loss carryforwards are strategically utilized as a corporate income tax planning tool.

The availability of tax loss benefit could encourage firms to take advantage of the tax benefit by undertaking sales promotional activities (real earnings management) to boost the income with a smaller proportional increase in the corporate income tax cost. Given that firms with tax loss carryforwards could accelerate sales by shifting future sales to the present period prior to the expiry of the tax loss benefit and with the subsequent minimal increase in the corporate income tax payment, it could thus be hypothesized that:

Hc₁: Tax loss carryforwards influences the association between the abnormal cash flow from operation and the greater use of corporate income tax planning.

For real earnings management through overproduction, firms have incentive to implement this strategy provided that the fixed costs account for a significant portion of the production cost and also the increase in the net income before tax can be offset against the tax loss benefit. In fact, firms with tax loss carryforwards are firms whose revenue falls short of the cost. As a result, the deployment of the overproduction strategy is largely dictated by the firms' idle capacity, the salability of the products as well as the transferability of the materials to the associated companies. Given that firms with tax loss carryforwards that engage in overproduction to boost the income would, through income tax planning, incur a smaller proportional increase in the corporate income tax cost, it could thus be hypothesized that:

Hc₂: Tax loss carryforwards influences the association between the abnormal production cost and the greater use of corporate income tax planning.

Expenditure cuts are a common practice adopted by underperforming firms. Similarly, firms with tax loss carryforwards could opt for the expenditure cuts to concurrently manipulate the income upward and lower the corporate income tax cost in light of their ability to offset the tax loss carryforwards against the incremental income. Given that firms with tax loss carryforwards would engage in the discretionary expenses cut to manage the income upward and at the same time take advantage of the tax benefit to lower the income tax payment (i.e. tax planning), it could thus be hypothesized that:

H_{c3}: Tax loss carryforwards influences the association between the abnormal discretionary expenses cut and the greater use of corporate income tax planning.

Firms with tax loss carryforwards might dispose of (sell) the fixed or investment assets that are not crucial to the income generation. In addition, the parent firms could divest the investment assets (e.g. long-term investment and property investment) of the subsidiaries with tax loss benefits. Through corporate income tax planning, the gains on such asset sales contribute minimally to the additional corporate income tax cost. Given that the availability of tax loss benefit encourages firms to engage in corporate income tax planning to offset the gain on asset sale to manage the earnings, it could thus be hypothesized that:

H_{c4}: Tax loss carryforwards influences the association between the abnormal gains from asset sales and the greater use of corporate income tax planning.

CHAPTER III

RESEARCH DESIGN AND TEST OF HYPOTHESES

3.1 SAMPLE SELECTION

In this research, the population was listed companies in Thailand during the years 2011-2014, and the data were from the SET Market Analysis and Reporting Tool (SETSMART). According to Chan et al. (2010), the shift from the tax-based accounting to the International Financial Reporting Standards (IFRS) provides incentives for tax noncompliance because the increased unconformity offers the managers an opportunity to concurrently manipulate the earnings upward and the tax cost downward. In addition, the research data started from the year 2011 since it was the year when Thailand fully adopted the IFRS. The other data, including the immediate and intuitional ownership, were obtained from the SETSMART, while the corporate governance rankings, one of the control variables, were retrieved from the website of the Thai Institute of Directors.

The sampled firms were those whose financial reports adequately contain the relevant data, including the real earnings management proxies, the corporate tax planning proxies, and those used as the control variables. This study utilized at least 15 observations for each industry-year grouping to estimate the normal levels of cash flow from operation, production cost, discretionary expenses, and gain on the asset sales (Roychowdhury 2006; Cohen and Zarowin 2010; Gunny 2010). The listed firms in regulated industries as well as banks and financial institutions were excluded since

they are subjected to different sets of reporting requirements (Hanlon and Heitzman 2010). Moreover, only the listed firms with a positive pre-tax income were included in the analysis of corporate income tax planning, as measured by the effective tax rate and the cash effective tax rate, due to the ability to make a meaningful comparison across firms and the increased reliability of the findings (Dyreng et al. (2008). In addition, firms with the disclosure of foreign subsidiaries in the consolidated financial statement were classified as multinational firms, while those with the tax loss carryforwards disclosure in the financial statement footnote were classified as firms with tax loss carryforwards.

3.2 CORPORATE INCOME TAX PLANNING MEASURES

According to Hanlon and Heitzman (2010), several measures exist to capture the degrees of corporate tax planning but they are not equally effective. In this current research, the corporate tax planning proxies are designed to capture the effects of “*unconformity*” transactions (i.e. the transactions that contribute to differences in the financial and tax reporting numbers) since the unconformity between the financial accounting principles and tax rules affords the firms with an opportunity to concurrently manipulate the book income upward and the taxable income downward. Examples of the book-tax unconformity tax planning practices include the straightforward use of research and development tax credits, the relocation of operations to low-tax countries, the shift of income from high- to low-tax locations or the shift of expenses from low- to high-tax locations, the engagement in synthetic

lease transactions, and the use of off-balance sheet entities to create deductions or losses that reduce the consolidated taxable income (Badertscher et al. 2010).

The effective tax rate (ETR), a measure of the corporate tax burden and its ability to pay taxes, reflects the relative tax burden across firms (Rego 2003). Since the ETR gauges the current tax liability associated with the taxable income against the pre-tax income based on the generally accepted accounting principles, it could thus be utilized to evaluate the proficiency of a corporation to reduce its current tax liability relative to its pre-tax accounting income. Specifically, the corporate tax planning activities often create the book-tax differences, and multinational corporations frequently use their foreign operations to avoid income taxation, both of which (i.e. the tax planning practices) could be captured using the ETR measure.

The book-tax differences result in variations in the ETR since the numerator is the taxable income while the denominator is the financial accounting income. Meanwhile, corporations avoid corporate income tax by reducing their taxable income while the financial accounting income remains essentially intact. According to (Rego 2003), the utilization of foreign sales offices, tax-exempt income, tax credits and deferral of income recognition for tax purposes reduces a firm's ETR. The ETR is thus an appropriate measure of corporate tax planning. The lower the ETR, the greater the likelihood of corporate income tax planning (Chen et al. 2010b).

To determine the extent of corporate income tax planning, this research has utilized two measures of corporate income tax planning to approximate the results: the

effective tax rate (ETR) and the cash effective tax rate (CETR). The effective tax rate (ETR) is expressed as

$$ETR_{it} = \text{Total Tax Expense}_{it} / \text{Pre-tax Income}_{it} \quad (1)$$

where ETR_{it} is the effective tax rate of firm i in year t , defined as the current total tax expense divided by the net income before tax of firm i in year t . In this research, the deferred tax expense component is excluded from the numerator (i.e. the total tax expense) in the ETR calculation because it represents the tax amount that will be paid (or refunded) in the future (Dyreng et al. 2008). The total tax expense comprises the components of the current tax expense and the deferred tax expense.

According to (Hope et al. 2013), the exclusion of deferred taxes from the effective tax rate calculation provides a more precise measure of the permanent corporate tax planning activities. The effective tax rate reflects the benefits from permanent tax planning strategies for which a tax benefit has been recorded in the financial statements (Mills et al. 1998; Hanlon and Heitzman 2010). Examples of the permanent tax planning strategies include investments in the tax-exempt or tax-favored assets and investments in the foreign jurisdictions with lower tax rates.

Nevertheless, according to (Hanlon and Heitzman 2010), corporate tax planning generates the temporary differences in which the cash tax paid is deferred to later periods that are not reflected in the ETR. Furthermore, ETR is reflected by the

financial accounting rules, such as changes in the valuation allowance and provision that affect the total tax expense (Hanlon and Heitzman 2010).

The second measure is the cash effective tax rate (CETR):

$$\text{CETR}_{it} = \text{Cash Taxes Paid}_{it} / \text{Pre-tax Income}_{it} \quad (2)$$

where CETR_{it} is the cash effective tax rate of firm i in year t , defined as the cash income tax paid divided by the pre-tax book income. According to Dyreng et al. (2008), the low CETR reflects a firm's ability to pay a low amount of cash taxes per dollar of pre-tax income over time. The CETR is unaffected by changes in the accounting accruals (e.g. more accelerated depreciation for tax purposes) but indicative of the deferral strategies.

According to (Dyreng et al. 2008), the use of cash taxes in the numerator renders the cash effective tax rate unaffected by the changes in valuation allowances or tax reserves. For instance, if corporations made changes to their valuation allowance, tax contingency reserves or the amount of foreign earnings designated as permanently reinvested, the changes would affect the ETR but have no impact on the CETR. On the other hand, if firms accelerate the tax depreciation relative to the book depreciation (i.e. an expense in the denominator), it would reduce the cash taxes paid (and the CETR) but not the ETR since the deferred tax expense would increase. Specifically, firms that reduce the corporate income tax through income tax planning

while maintaining the financial accounting income would exhibit a lower ETR or CETR, rendering both metrics the reasonable measures of effective tax planning.

3.3 REAL EARNINGS MANAGEMENT MEASURES

Following Herrmann et al. (2003), Roychowdhury (2006), Gunny (2010), this research takes into consideration four real earnings management activities, i.e. sales manipulation, overproduction, the reduction of discretionary expenses and gains on asset sales; and their respective impacts on the four variables: the abnormal levels of cash flow from operation (CFO), production cost, discretionary expenses and gain on the sale of assets.

Through the sales manipulation strategy, managers attempt to accelerate the timing of sales through deep discount offers and/or highly attractive layaway plans. The sales promotional tactics would generate more demand for the products and/or motivate those who have postponed the purchase to take immediate action. The sales volumes however would return to normal or even drop once the firm reverts to the old price. The total earnings in the current period would be considerably higher as a result of the additional sales, assuming the positive margins. The utilization of the deep price discounts and attractive layaway plans to manipulate the sales volumes would nevertheless contribute to the lower cash inflows per sales in the current period due to the decline in the margins.

Under the overproduction scheme, the managers would produce the goods in excessive supply (i.e. substantially more than the actual demand) in order to increase the earnings. With the higher production level, the fixed overhead costs are spread over a larger number of units, thus lowering the fixed cost per unit. As long as the reduction in the unit fixed cost is not offset by any increase in the unit marginal cost, the unit total cost would continue to decline. The practice would decrease the cost of goods sold (COGS) and contribute to the higher operating margins. Nevertheless, these firms would incur higher production and holding costs, which eventually leads to the higher overall production costs relative to sales and the lower operating cash flow despite the rise in sales levels.

Under the discretionary expenditure reduction scheme, the reduction could be realized by cutting or postponing the disbursement of, e.g. advertising, research and development, and selling and administrative expenses. The practice would boost the earnings in the current period. The adoption of the discretionary expenditure reduction could result in the higher current-period cash flows if such expenses are on the cash basis.

With the asset sale manipulation, firms boost the income by selling fixed assets and investment assets when the market prices of these assets are considerably higher than the book value. In addition, the timing of asset sales could be more effectively exploited for earnings management, relative to alternative techniques, such as alternating between different accounting methods.

Roychowdhury (2006) hypothesized that the manipulation of real earnings activities would result in the abnormally low cash flow from operation, the unusually high production costs, or the unusually low discretionary expenses, depending on the real earnings management strategy deployed. Following Roychowdhury (2006), this current research defines the normal cash flow from operation as a linear function of sales and changes in sales in the current period. To estimate the model parameters, the following cross-sectional regression was run for every industry and year.

$$\text{CFO}_t/A_{t-1} = \alpha_0 + \alpha_1 (1/A_{t-1}) + \beta_1 (S_t/A_{t-1}) + \beta_2 (\Delta S_t/A_{t-1}) + \varepsilon_t, \quad (3)$$

where CFO_t is the cash flow from operation in period t (i.e. the current period), A_{t-1} is the total assets at the end of period $t-1$, S_t is the sales during period t , and ΔS_t is the change in sales in the current period.

In addition, according to (Roychowdhury 2006), the manipulation strategies by which the earnings is boosted through overproduction and cut in the discretionary expenditures, e.g. research and development and marketing expenditures, would contribute to the abnormally high production costs and abnormally low discretionary expenses relative to sales. To decompose the actual production costs and the discretionary expenses into the normal and abnormal level categories, this current research respectively applies equations (4) and (5) to each industry and year.

This research expresses the normal production cost as a linear function of sales, change in sales in the current period and change in sales in the previous period. In addition, this study runs the following cross-sectional regression for every industry and year in order to estimate the model parameters.

$$\text{PROD}_t/A_{t-1} = \alpha_0 + \alpha_1 (1/A_{t-1}) + \beta_1 (S_t/A_{t-1}) + \beta_2 (\Delta S_t/A_{t-1}) + \beta_3 (\Delta S_{t-1}/A_{t-1}) + \varepsilon_t, \quad (4)$$

where PROD_t is the sum of cost of goods sold in the current period and the change in inventory in the current period, A_{t-1} is the total assets at the end of period t-1, S_t is the sales during period t, ΔS_t is the change in sales in the current period and ΔS_{t-1} is the change in sales in the previous period.

To estimate the normal discretionary expenses, this study runs the following regression for every industry and year.

$$\text{DISEXP}_t/A_{t-1} = \alpha_0 + \alpha_1 (1/A_{t-1}) + \beta_1 (S_{t-1}/A_{t-1}) + \varepsilon_t, \quad (5)$$

where DISEXP_t is the sum of selling, general and administrative expenses in the current period, A_{t-1} is the total assets at the end of period t-1, and S_{t-1} is the sales in the period t-1.

Following Gunny (2010), this research estimates the normal level of gain on asset sales using the following regression for every industry and year.

$$\begin{aligned} \text{GainA}_t/\text{A}_{t-1} = & \alpha_0 + \alpha_1 (1/\text{A}_{t-1}) + \beta_1 (\text{ASales}_t/\text{A}_{t-1}) + \beta_2(\text{ISales}_t/\text{A}_{t-1})+ \beta_3 \text{MV}_{t-1} \\ & + \beta_4\text{Q}_t + \beta_5\text{IN}_t + \varepsilon_t, \end{aligned} \quad (6)$$

where GainA is the income from asset sales, A_{t-1} is the total assets at the end of period t-1, ASales is the fixed asset sales, ISales is the investment sales, MV is the natural logarithm of market value, Q is Tobin's Q, calculated as the sum of the market value of equity and short- and long-term debts divided by total assets, and IN is the internal fund measured as the sum of net income before extraordinary items, research and development expense, and depreciation and amortization.

Equation (6) is based on Bartov (1993) and augmented by Herrmann et al. (2003) for the variables that have been shown to influence the level of gain on asset sales. The market value is included to control for the size effect and the internal funds for the reduced funds available for investment. Tobin's Q is a proxy of the marginal benefit relative to the marginal cost of acquiring an additional unit of asset, both of which influence the decision to dispose of (sell) the existing fixed assets. In addition, the use of asset sales as an explanatory variable in equation (6) requires that the relationship between the income from asset sales (GainA) and the fixed asset (ASales) and investment sales (ISales) be monotonic. The variables are transformed to render the relationship monotonic such that when the income from asset sales is negative, the fixed asset and investment sales also carry a negative sign. Thus, a positive coefficient

could be expected. Consistent with (Bartov 1993; Herrmann et al. 2003), the high residual from equation (6) indicates the asset sales manipulation.

For each firm-year, the abnormal cash flow from operation is the actual cash flow from operation minus the normal cash flow from operation calculated using the estimated coefficient from the corresponding industry-year model and the firm-year's sales and lagged assets in equation (3). Then, this study calculates the abnormal level of cash flow from operation (R_CFO) by subtracting the normal level (eq. (3)) from the actual cash flow from operation. The abnormal level of production cost (R_PROD) is the actual production costs minus the normal level estimated using eq. (4); and the abnormal level of discretionary expenses (R_EXP) is the actual discretionary expenses minus the normal level predicted using eq. (5). The abnormal level of gain on asset sales (R_GAIN) is the actual gain on asset sales minus the estimated gain on asset sales using eq. (6).

The unusually low cash flow from operation (R_CFO), high production costs (R_PROD), low discretionary expenses (R_EXP) and high gain on asset sales (R_GAIN) indicate the utilization of real earnings manipulation, respectively, through the accelerated sales, overproduction, cut in discretionary expenses and accelerated asset sales. In this research, for ease of interpretation, the operation signs associated with R_CFO and R_EXP are multiplied by negative one (-1) to render them consistent with those of R_PROD and R_GAIN . The greater R_CFO and R_EXP indicate the greater use of real earnings management.

In fact, many firms that engage in real earnings management implement a combination of earnings manipulation strategies to boost the reported income. To better capture the effects of real earnings management, this current research utilized two aggregate real earnings manipulation measures (Zang (2011); Cohen and Zarowin (2010)). The first aggregate measure (RM_1) is the sum of abnormal discretionary expenses (R_EXP) and abnormal production (R_PROD). The higher RM_1 indicates the firms' active engagement in the real earnings management activities through overproduction and cutting the discretionary expenses. The second aggregate measure (RM_2) is the combination of abnormal cash flow from operation (R_CFO) and abnormal discretionary expenses (R_EXP). The higher RM_2 means the higher the likelihood that the firm deploys the sales acceleration and reduced discretionary expenditures strategies to manipulate the reported earnings upward. Nevertheless, this current research does not utilize the aggregate measure of the abnormal production costs combined with the abnormal cash flow from operation since, according to Roychowdhury (2006), the activity that gave rise to the abnormally high production costs also led to the abnormally low cash flow from operation. Thus, a combining of the two values amounts to double counting.

It should however be acknowledged that the three individual measures of real earnings management (R_CFO, R_PROD and R_EXP) each have different implications on earnings that could dilute aggregate-measure results. This research has thus presented the results associated with the two aggregate measures (RM-1 and RM_2) as well as the three individual real earnings management proxies (R_CFO, R_PROD, and R_EXP).

3.4 MODEL SPECIFICATION

To test whether an association exists between real earnings management and corporate income tax planning (Ha₁-Ha₄), this empirical research has applied the following cross-sectional regression model to the sampled listed firms:

$$\begin{aligned}
 \text{TaxPlan}_{it} = & \alpha_0 + \beta_1 \text{REM}_{it} + \beta_2 \text{FM}_{it} + \beta_3 \text{INS}_{it} + \beta_4 \text{CG}_{it} + \beta_5 \text{CONS}_{it} + \beta_6 \text{MNF}_{it} \\
 & + \beta_7 \text{BOI}_{it} + \beta_8 \text{LEV}_{it} + \beta_9 \text{SIZE}_{it-1} + \beta_{10} \text{MB}_{it-1} + \beta_{11} \text{ROA}_{it} + \beta_{12} \text{NOL}_{it} \\
 & + \beta_{13} \text{PPE}_{it} + \beta_{14} \text{INT}_{it} + \beta_{15} \text{EQI}_{it} + \text{IndustryDummies} \\
 & + \text{YearDummies} + \varepsilon_{it},
 \end{aligned} \tag{7}$$

where TaxPlan is the corporate income tax planning, measured as the effective tax rate (ETR) and the cash effective tax rate (CETR); REM is the real earnings management, measured as the abnormal cash flow from operation (R_CFO), abnormal production cost (R_PROD), abnormal discretionary expenses (R_EXP), abnormal gain on asset sales (R_GAIN) and the two aggregate measures of real earnings management (RM_1, RM_2). The significantly negative coefficients of real earnings management proxies on corporate income tax planning are expected if the firms engage in corporate income tax planning in conjunction with real earnings management to achieve the earnings target.

In addition, the above regression model incorporates the factors (i.e. control variables) that influence the firms' engaging in corporate income tax planning activities. The control variables could be categorized into three groups. The first

group of control variables encompasses the firm characteristics (i.e. family firm (FM) and institutional ownership (INS)), level of corporate governance (CG), financial constraint (CONS), multinational firms (MNF), firm with tax holiday from investment promotion (BOI), firm's leverage (LEV), firm size (SIZE), and market to book ratio (MB). These variables have been reported to have influence over firms' engaging in corporate income tax planning.

According to Chen et al. (2010b), the family-owned firms engage less in corporate income tax planning vis-à-vis the non-family firms due to the former's aversion to possible penalty and reputation harm. Khurana and Moser (2010) documented that firms with a high level of institutional ownership actively engage in corporate income tax planning due to the overemphasis placed on the short-term performance by the institutional shareholders, a phenomenon which leads the corporate managers to focus almost exclusively on the short-term earnings. In this research, the family-owned firms whose shareholding is greater than or equal to 25 % and with a presence in the company board are coded 1 and 0 otherwise.

According to Edwards et al. (2013), firms under the financial constraints exhibit more corporate income tax planning. In this research, the measurement of financial constraints is the firms' z-score (Altman (1968). Meanwhile, Rego (2003) documented that multinational firms with extensive foreign operations have lower effective tax rates. This current research has thus incorporated multinational firm indicator (MNF) in the regression model, where 1 is assigned to the variable for firms with a foreign subsidiary and 0 otherwise. In addition, Minnick and Noga (2010)

reported the impact of corporate governance on the extent of corporate income tax management. In this current research, based on the corporate governance rankings released by the Thai Institute of Directors, firms awarded 3-5 stars which represent the high level of corporate governance were coded 1 and 0 otherwise.

To attract direct foreign investments, most developing countries offer an array of investment incentives, including tax holiday, to the prospective overseas investors. In the case of Thailand, the tax incentives take the form of a 50% reduction in corporate income tax or corporate income tax waivers. To control for the investment promotion (BOI), firms given tax incentives under the investment promotion are coded 1 and 0 otherwise. Firm's leverage (LEV), as measured by the ratio of long-term debt to assets, is incorporated into the model to control for the existing capital structure of the firm. According to (Graham and Tucker 2006), the benefit of debt is the tax shield for which it provides. The same authors also noted that, on average, firms would utilize less debt when they are engaged in tax sheltering, compared to the non-shelter firms.

According to (Chen et al. 2010b), firms with high growth potential would make more investment in the tax-favored assets that generate timing differences in the recognition of expenses. To control for firm size and growth firms, the natural log of total assets (SIZE) and the market to book ratio (MB) are incorporated into the model. According to (Mills et al. 1998), large firms are commonly regarded as more sophisticated and are capable of structuring the complex tax-reduction transactions with the help of expert tax advisors.

The second group of control variables concerns firms' profitability. The return on assets (ROA) is included to capture the firms' profitability, as measured by the ratio of pretax income to total assets. According to Dyreng et al. (2008), firms with low cash effective tax rates (indicating high corporate income tax planning) exhibited the higher return on assets than those whose cash effective tax rates were high. This current research also includes an indicator variable (NOL) to control for the presence of net operating loss carryforwards. Consistent with Chen et al. (2010b), firms with tax loss carryforwards have lower tax rates because they are less profitable and are able to utilize the tax loss carryforwards to reduce the taxable income and thus the cash taxes.

The third group of control variables attempts to control for the differences between book and tax reporting that could affect corporate income tax planning. According to (Chen et al. 2010b), firms with high levels of either fixed or intangible assets tend to have more non-debt tax shields in the form of higher depreciation or amortization deductions for tax purposes than appeared on the books. This current research thus incorporates in the analysis the firm's property, plant and equipment (PPE) scaled by total assets, and the intangible assets (INT) scaled by firm total assets. To control for the differences in the book and tax treatments of the consolidated earnings accounted for by the equity method, the equity income (EQI) scaled by lagged assets is also included in the regression model. In addition, (Dyreng et al. 2008) documented the substantial variations in the effective tax rates (ETR) and the cash effective tax rates (CETR) across industries and over time, this current

research has thus included the year and industry indicator variables to control for the year and industry fixed effects.

To test whether firms' multinational characteristic influences the association between real earnings management and corporate income tax planning (Hb_1 - Hb_4), the interaction term ($REM * MNF$) is introduced into the initial regression model (i.e. equation (7)) and is rewritten as:

$$\begin{aligned} \text{TaxPlan}_{it} = & \alpha_0 + \beta_1 \text{REM}_{it} + \beta_2 \text{REM}_{it} * \text{MNF}_{it} + \beta_3 \text{FM}_{it} + \beta_4 \text{INS}_{it} + \beta_5 \text{CG}_{it} \\ & + \beta_6 \text{CONS}_{it} + \beta_7 \text{MNF}_{it} + \beta_8 \text{BOI}_{it} + \beta_9 \text{LEV}_{it} + \beta_{10} \text{SIZE}_{it-1} + \beta_{11} \text{MB}_{it-1} \\ & + \beta_{12} \text{ROA}_{it} + \beta_{13} \text{NOL}_{it} + \beta_{14} \text{PPE}_{it} + \beta_{15} \text{INT}_{it} + \beta_{16} \text{EQI}_{it} \\ & + \text{IndustryDummies} + \text{YearDummies} + \varepsilon_{it}, \end{aligned} \quad (8)$$

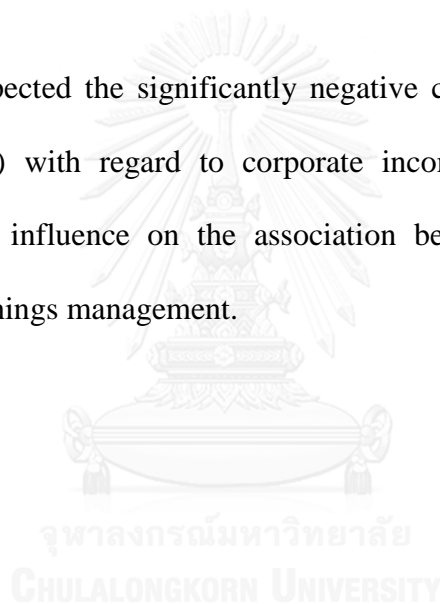
All other variables are defined as above except for the real earnings management proxies (REM), which consist of the individual measures (R_CFO , R_PROD , R_EXP , and R_GAIN) and two aggregate measures (RM_1 and RM_2). This research has expected the significantly negative coefficients on the interaction term ($REM * MNF$) with regard to corporate income tax planning if firms' multinational characteristic influences the association between corporate income tax planning and real earnings management.

To test whether tax loss carryforwards influences the association between real earnings management and corporate income tax planning (Hc_1 - Hc_4), another

interaction term (REM * NOL) is introduced into the cross-sectional regression model and is expressed as:

$$\begin{aligned}
 \text{TaxPlan}_{it} = & \alpha_0 + \beta_1 \text{REM}_{it} + \beta_2 \text{REM}_{it} * \text{NOL}_{it} + \beta_3 \text{FM}_{it} + \beta_4 \text{INS}_{it} + \beta_5 \text{CG}_{it} \\
 & + \beta_6 \text{CONS}_{it} + \beta_7 \text{MNF}_{it} + \beta_8 \text{BOI}_{it} + \beta_9 \text{LEV}_{it} + \beta_{10} \text{SIZE}_{it-1} \\
 & + \beta_{11} \text{MB}_{it-1} + \beta_{12} \text{ROA}_{it} + \beta_{13} \text{NOL}_{it} + \beta_{14} \text{PPE}_{it} + \beta_{15} \text{INT}_{it} + \beta_{16} \text{EQI}_{it} \\
 & + \text{IndustryDummies} + \text{YearDummies} + \varepsilon_{it}, \tag{9}
 \end{aligned}$$

The research has expected the significantly negative coefficients on the interaction term (REM * NOL) with regard to corporate income tax planning if tax loss carryforwards exerts influence on the association between corporate income tax planning and real earnings management.



CHAPTER IV

RESULTS

4.1 DESCRIPTIVE STATISTICS

In Table 1, Panel A presents the sampling procedure of this empirical research. The process started with a total of 2,086 firm-years from 2011-2014. Of the total, 109 and 394 firm-years respectively belong to the rehabilitation and possible delisting firms and the financial services and insurance firms, which were removed because of the different tax and financial reporting. In addition, 92 firm-years whose fiscal years do not end on 31 December were eliminated. Following Dyreng et al. (2008), another 261 firm-years of firms with negative pre-tax income were excluded to allow for the effective tax rate comparison across firms and the enhanced interpretation of the effective tax rate (i.e. the effective tax rate with a positive denominator). The final sample is thus 1,230 firm-years.

Panel B of Table 1 presents the final samples by sector (industry). According to the Stock Exchange of Thailand (SET), the listed companies are categorized into eight sectors: the financial and insurance services, agro and food industry, consumer products, industrials, property and construction, resources, services, and technology sectors. The financial and insurance sector was however excluded from this study. The distribution of firm-years specific to this research was 22.44% belonging to the services sector, 21.63% the property and construction sector, 17.32% the industrials sector, 11.95% the agro and food industry sector, 9.35% the technology sector, 8.94%

the consumer products sector, and 8.37% the resources sector. The services and property and construction sectors together accounted for the largest proportion of the firm-years in the analysis (44.07%). Panel C of Table 1 demonstrates the distribution of the final samples by year, with the years 2011, 2012, 2013 and 2014 accounting for 24.96%, 24.47%, 25.37% and 25.20%, respectively. The final firm-year observations are fairly dispersed among the four years.

In Table 2, Panels A and B respectively present the number of multinational (MNF) and only-domestic firms (DF) by sector and year. A total of 272 firm-year observations belong to the multinational firms and 958 firm-year observations to the only-domestic firms. There are multinational firms in all sectors, with the highest concentration in the industrials sector (50 firm-years). The distribution is adequately dispersed among the four years. Panels C and D of Table 2 respectively tabulate the number of firms with and without tax loss carryforwards by sector and year. Of the 1230 observations, 326 firm-year observations are with tax loss carryforwards whereas 904 are without. The property and construction sector exhibits the greatest number of firm-year observations with tax loss carryforwards (72 firm-years). The firms with tax loss carryforwards are fairly distributed among the four years.

In Table 3, Panel A details the means and medians of the effective tax rate (ETR) and the cash effective tax rate (CETR) by sector. The ETR is calculated as the total tax expense (excluding deferred tax) divided by net income before tax, while the CETR is the cash tax paid divided by net income before tax. The lower ETR and CETR indicate the greater use of corporate income tax planning. In the table, the

average tax rate was 19.86%. By comparison, the agro and food industry sector paid the lowest corporate income tax (ETR= 0.1479 and CETR= 0.1787) while the property and construction sector was charged the highest corporate income tax rates (ETR=0.2377 and CETR= 0.2741).

Panel B of Table 3 tabulates the means and medians of the effective tax rate (ETR) and the cash effective tax rate (CETR) by year. The ETR means of 2011-2014 are 0.2334, 0.1962, 0.1891 and 0.1760, respectively, consistent with the downward trend of Thailand's corporate income tax rates from 30% in 2011, 23% in 2012, to 20% in 2013 and 2014. In fact, the *consolidated* total tax expenses of these firms are likely to be lower than the nominal corporate income tax rate.

Panel C of Table 3 presents the number of firm-years with either the positive (the residual of real earnings management proxies >0) or negative (the residual of real earnings management proxies ≤ 0) abnormal operating cash flow (R_CFO), abnormal production cost (R_PROD), abnormal discretionary expenses (R_EXP) and abnormal gain on asset sales (R_GAIN). These variables are the residual from the optimal operation. Specifically, the more positive R_CFO, R_EXP (both multiplied by negative one), R_PROD and R_GAIN indicate the firms' active engagement in the upward earnings manipulation through sales promotion activities, overproduction to deflate the unit fixed cost and thus the cost of goods sold, cutting the discretionary expenses, and the sale of fixed and investment assets, respectively.

In Panel C, a total of 610 firm-year observations (49.59%) show the positive abnormal cash flow from operation (R_CFO), suggesting that these firms are likely to engage in sales manipulation to increase the reported income numbers. For overproduction (R_PROD), 612 firm-year observations (49.76%) adopted the overproduction technique to manage the income upward, while 627 firm-years (50.98%) resorted to cutting their discretionary expenses (R_EXP) to boost the income. In addition, 631 firm-years (51.85%) boosted the income through the sales of fixed and investment assets (R_GAIN). Moreover, a total of 605 firm-year observations (49.19%) engaged in both overproduction and the discretionary expenses cut (RM_1) to increase the reported income, and 591 firm-year observations (48.05%) manipulated the reported income upward using a combination of sales manipulation and discretionary expense deduction (RM_2).

Table 4 tabulates the descriptive statistics, comprising the mean, median, standard deviation, 25th, 75th and 90th percentile. In the table, the variables are the dependent variables, the hypothesis testing variables and the control variables for the main test of the hypotheses. The dependent variables are the effective tax rate (ETR) and the cash effective tax rate (CETR). The hypothesis testing variables (i.e. the real earnings management proxies) are the abnormal cash flow from operation (R_CFO), abnormal production cost (R_PROD), abnormal discretionary expenses (R_EXP), and abnormal gain on asset sale (R_GAIN). The mean ETR and CETR are 0.1986 and 0.2299, respectively, while the corresponding medians are 0.1931 and 0.1983, suggesting that most of the final sample firms paid a relatively low corporate income tax rate (20% in 2014).

As previously noted, the more positive values of the real earnings management proxies indicate the firms' active engagement in the real earnings management activities. The mean R_CFO, R_PROD and R_EXP are 0.0025, -0.0153, and -0.0210 respectively, suggesting that typically firms manipulate the earnings upward through the sales acceleration using sales promotions. Interestingly, the median of R_EXP is positive (0.0008), suggesting that more than half of the final samples reduce their discretionary expenses to increase the reported income. The mean R_GAIN is also positive (0.0015), indicating that on average the final sample firms manage the income upward by the sale of fixed and investment assets, while the median of 0.0000 suggests that less than half of the sample firms manipulate the income upward through the timing of asset sales.

The mean (median) of RM_1 is -0.0363 (-0.0022). The negative median implies that less than half of the observations concurrently utilize both overproduction and the discretionary expenses cut to manipulate the income upward. Meanwhile, RM_2 can capture both sales manipulation and overproduction. The mean RM_2 of -0.0185 suggests that on average firms opt against the upward manipulation with the concurrent use of sales manipulation and overproduction. This is consistent with the median RM_2 of -0.0054, indicating that less than half of the observations simultaneously use both schemes to manipulate the income upward.

Family firm (FM) is an indicator variable, coded 1 if the controlling family holds greater than or equal to 25% of the shares and sits on the company board and 0 otherwise. The mean (median) of family firms (FM) is 0.6146 (1.0000), consistent

with (Phattaranawig 2012), who reported that most listed firms in Thailand are family-owned companies. Meanwhile, the mean of institutional ownership (INS), as measured by the proportion of institutional ownership to total shares, is 0.0710, suggesting that on average the institutional investors account for 7.10% of the market capitalization of the sample firms. This validates the argument that the Thai capital market is largely controlled by the family-owned firms.

Corporate governance (CG) is an indicator variable, coded 1 for firms awarded three to five stars by the Thai Institute of Directors and 0 otherwise. The mean (median) of corporate governance is 0.7293 (1.0000), indicating that most listed companies have are firms with good corporate governance. According to (Edwards et al. 2013), firms under financial constraints (CONS) are faced with higher costs of external fund, forcing them to rely on the internal source of funds from tax savings through corporate income tax planning. The median Z-score is 3.0916, which is greater than the 2.675 threshold for the financially distressed firms (Altman (1968), implying that more than half of the observations are in sound financial health.

The multinational firm (MNF) variable is to control for foreign operation. The mean MNF is 0.2211 and its median is 0.0000, suggesting that more than half of the observations have no foreign subsidiary. The mean and median BOI are 0.4382 and 0.0000, indicating that less than half of the observations are afforded with tax exemptions under the investment promotion. The mean leverage ratio (LEV) is 0.1624 and the median is 0.0835, indicating that most of the firms utilize low levels of debt in their capital structure. The mean natural logarithm of total assets as the proxy

of firm size is 22.2908. The mean (median) of the market to book ratio (MB) is 2.8351 (1.5750), suggesting that the market values of most firms are higher than the book values.

Firms with tax loss carryforwards (NOL) can utilize the tax benefit to reduce the tax cost, resulting in the lower effective tax rate. NOL is an indicator variable, coded 1 for firms with tax loss carryforwards and 0 otherwise. The mean NOL of 0.1167 suggests that 11.67% of the firm-years have tax loss carryforwards. Meanwhile, the mean ROA of 0.2650, compared to a prior study in Thailand by (Tantiyavarong 2009) whose mean ROA is 0.0900, indicates that the firms' profitability has increased. The difference could be attributed to the different study periods. The mean PPE and INT are 0.3704 and 0.0423 respectively, indicating that firms have invested less in the intangible assets and more in the property plant and equipment, accounting for 37.04% of the total assets. The mean equity income (EQI) is 0.0055, indicating that few firms use the equity method to record investments in the associated company.

Table 5 tabulates the Pearson and Spearman correlations between the dependent and independent variables. Spearman's rank correlations are shown in the upper triangle of the table, while Pearson's product moment correlations in the lower triangle. Since both the Pearson and Spearman correlations are fairly consistent and most of the variables are of interval scale, this research has deliberately focused on the Pearson coefficient correlations. The analysis reveals that the ETR is significantly positively associated with the CETR (0.6643), suggesting the likelihood of both

measures capturing some of the same aspects of corporate income tax planning. They are however not perfectly associated, so the application of the different measures of corporate income tax planning to the same input yields the triangulated and strengthened inferences. Specifically, the ETR can efficiently capture the permanent corporate income tax planning strategies, while the CETR the deferral corporate income tax strategies. The utilization of both measures offers more comprehensive results.

The significantly negative associations between ETR and R_GAIN (-0.0616), and between CETR and R_GAIN (-0.0557) indicate that firms which manipulate the earnings through the sale of assets also engage in corporate income tax planning, resulting in the lower ETR and CETR. Financial constraint (CONS) is significantly positively associated with ETR and CETR (0.0656 and 0.0609), suggesting that firms with sound financial health are less likely to engage in corporate income tax planning, consistent with Edwards et al. (2013). The significantly negative associations between ETR and MNF (-0.0735) and between CETR and MNF (-0.0571) suggest that firms with a subsidiary located outside Thailand are presented with more opportunities to lower the corporate income tax through tax planning. The significantly negative associations between ETR and BOI (-0.2149) and between CETR and BOI (-0.1997) indicate that tax holiday significantly contributes to a lowering in the corporate income tax.

The significantly negative associations between ETR and SIZE (-0.0746) and between CETR and SIZE (-0.0939) indicated that large firms are more sophisticated with regard to corporate income tax planning with the help of tax consultants. The significantly negative associations between ETR and ROA (-0.0738) and between CETR and ROA (-0.1091) are consistent with Dyreng et al. (2008), who reported that firms with a higher ROA have a lower CETR. The significantly negative associations between NOL and ETR (-0.1182) and between NOL and CETR (-0.1433) indicate that firms with tax loss carryforwards can exploit this tax benefit to reduce the tax expenses. The significantly negative associations between ETR and EQI (-0.1386) and between CETR and EQI (-0.1278) are consistent with the notion that the lowering of the effective tax rate and the cash effective tax rate is attributable to the unconsolidated financial statement.

The high correlations between RM_1 and R_PROD (0.9379), between RM_1 and R_EXP (0.8551), between RM_2 and R_CFO (0.6115), between RM_2 and R_EXP (0.7601), and between RM_1 and RM_2 (0.7603) are mechanical because RM_1 is the sum of R_PROD and R_EXP and RM_2 the sum of R_CFO and R_EXP. The positive association between R_PROD and R_EXP (0.6222) suggests that firms concurrently engage in both overproduction and the discretionary expenses cut, leading to the higher reported income numbers. The significantly positive association between R_CFO and R_GAIN (0.1983) is probably due to the gain on the sale of tradable securities, classified as a cash flow from operation, being included as gains on asset sales. The significantly negative associations between institutional ownership INS and R_CFO; and R_PROD (-0.0928 and -0.0555) indicate that firms with high

proportions of institutional ownership tend to normalized the sales and production activity, implying that the institutional owners are unlikely to boost the short-term income through real earnings activities. The significantly positive association between INS and CG (0.1769) suggests that firms with high proportion of institutional ownership tend to be firms with good corporate governance. Meanwhile, the correlation matrix shows no perfectly significant association between the independent variables, indicating the non-existence of multicollinearity. In addition, the mean variance inflation factors (VIF) for all models are less than 10.

4.2 EMPIRICAL RESULTS

4.2.1 THE ASSOCIATION BETWEEN CORPORATE INCOME TAX PLANNING AND REM

To test the association between corporate income tax planning and real earnings management, this research has performed the cross-sectional regression for the effective tax rate (ETR) and the cash effective tax rate (CETR) on the real earnings management proxies (R_CFO, R_PROD, R_EXP, R_GAIN, RM_1, RM_2) and the control variables. The advantage of using ETR lies in its ability to reflect the benefits from permanent tax planning for which a tax benefit has been recorded in the financial statement (Mills et al., 1998; Hanlon and Heitzman, 2010), while CETR can efficiently reflect the deferral corporate income tax planning (Dyreng et al. 2008). Following (Dyreng et al. 2010; Hope et al. 2013; McGuire et al. 2014), the effective tax rate and the cash effective tax rate with the value greater than one were winsorized

to equal one throughout this current research. This winsorization limits the extreme values associated with the outliers that could influence the end results.

Table 6 tabulates the associations between six real earnings manage proxies and the effective tax rate. The F-statistics are all statistically significant at the 1% level, indicating that an overall significance test of the models is valid. The explanatory variables associated with each model are able to explain corporate income tax planning by roughly 14%, as measured by the R-squared values. The negative associations between the real earnings management proxies and the effective tax rate indicate that firms engage in real earnings activities to manage the earnings upward and at the same time in corporate income tax planning, resulting in the overall lower tax cost.

In Table 6, no statistically significant association exists between the abnormal cash flow from operation (R_CFO) and the effective tax rate (ETR); and between the abnormal production cost (R_PROD) and the effective tax rate (ETR). H_{a1} and H_{a2} are thus not supported. The results suggest that firms boosting the net income through sales manipulation and overproduction fail to mitigate the rise in the REM-induced corporate income tax payment.

The abnormal discretionary expense (R_EXP) is significantly negatively associated with the effective tax rate (-0.0531) at the 5% level. The abnormal discretionary expenses (R_EXP) are multiplied by negative one such that the higher abnormal discretionary expenses indicate the greater use of real earnings management

through the discretionary expenses cut. The result supports H_{a3} in that firms cut their discretionary expenses to increase the earnings before tax and at the same time engage in corporate income tax planning to reduce the tax cost, resulting in the increased earnings after tax. In addition, a significantly negative association exists between the abnormal gain on asset sales (R_GAIN) and the effective tax rate (-0.3759) at the 1% level. The negative significant association supports H_{a4} in that firms' disposal (sale) of assets does not contribute to the additional income tax payment due to effective corporate income tax planning.

The aggregate measures of real earnings management (RM_1 and RM_2) are significantly negatively associated with the effective tax rate (-0.0165 and -0.0318) at the 10% and 5% levels, respectively. RM_1 captures both the overproduction and discretionary manipulations, while RM_2 captures both the sales and discretionary expenses manipulations. Since RM_1 are the sum of R_EXP and R_PROD and RM_2 are the sum of R_EXP and R_CFO , the high correlations are found (Table 5). In other words, the significantly positive coefficients of RM_1 and RM_2 are driven by R_EXP .

Due to the limitation of the effective tax rate (ETR) that fails to capture the deferred cash, this current research thus runs the cash effective tax rate (CETR) on the real earnings management proxies. The advantage of using the cash tax paid in the numerator is that the cash effective tax rate is unaffected by changes in valuation allowances or tax reserves and also reflects the deferral tax strategies. The results are tabulated in Table 7. The F-statistics are all statistically significant at the 1% level,

indicating that an overall significance test of the models is valid. The independent variables are able to explain corporate income tax planning by about 14%, as measured by the R-squared values.

Consistent with Table 6, the coefficients of R_CFO and R_PROD are not statistically significant. However, in contrast with Table 6, the R_EXP coefficient is not statistically significant possibly due to the fact that this particular real earnings management technique is more applicable to permanent income tax planning than to deferral income tax planning. The R_GAIN coefficient (-0.3405) is statistically significant in the negative direction at the 5% level, supporting the results in Table 6 in that firms tend to dispose of (sell) assets in a lower income tax setting. Furthermore, the aggregate measures of real earnings management (RM_1 and RM_2) are insignificantly associated with the cash effective tax rate (CETR).

For the control variables, the results of some control variables for both the ETR and CETR models are moderately consistent with prior findings. Content with Edwards et al. (2013), this current research found the significantly positive associations between CONS and ETR; and CETR (in Tables 6 and 7), indicating that firms under financial constraints (lower Z-score) are more likely to engage in corporate income tax planning to lower the tax cost because the acquisition of external funds is difficult. The negatively significant coefficients of BIO in Tables 6 and 7 indicate that tax holiday (tax exemptions under investment promotions) contributes to a lowering of the effective tax rate and the cash effective tax rate. The significantly negative coefficients of SIZE (Tables 6 and 7) suggest that large firms

are more sophisticated in corporate income tax planning than small firms due to the former's extensive personnel and financial resources.

MB is significantly negatively associated with ETR and CET, suggesting that the growth firms make more investment in the tax-favored assets that lead to the lower corporate income tax expenses (Chen et al. 2010b). Regarding the ROA, the significantly negative coefficients in Tables 6 and 7 are consistent with Dyreng et al. (2008), who documented that firms with the higher return on assets actively engage in corporate income tax planning. The negative coefficients of NOL in Tables 6 and 7 indicate that firms with tax loss carryforwards benefit from the tax loss through tax planning strategies. In addition, the negative associations between EQI and ETR; and CETR suggest that the equity income method of accounting results in the differences in the ETR and CETR among firms.

4.2.2 THE INFLUENCE OF FIRMS' MULTINATIONAL CHARACTERISTIC ON THE ASSOCIATION BETWEEN CORPORATE INCOME TAX PLANNING AND REM

Table 8 tabulates the means and medians of ETR and CTR of multinational and only-domestic firms by sector and year. The multinational firms in the agro and food industry, consumer products, property and construction and technology sectors exhibit the lower ETR and CETR than the only-domestic firms in the corresponding sectors. Specifically, the multinational firms in the technology sector have the lowest mean ETR and CETR (mean ETR and CETR of 0.0710 and 0.1052). From 2011-

2014, the multinational firms realized the lower ETR and CETR than the only-domestic counterparts, suggesting that, on average, the multinational firms face the lower corporate income tax cost than do the only-domestic firms.

Table 9 tabulates the number of firm-years of multinational firms resorting to the real earnings management activities. R_CFO , R_PROD , R_EXP and R_GAIN are the residuals from the optimal operation. The positive residuals of R_CFO , R_PROD , R_EXP (multiplied R_PROD and R_EXP by negative one) and R_GAIN suggest that the multinational firms engage in the upward income management through sales manipulation, overproduction, discretionary expense reduction and asset sales. In addition, the multinational firms are more likely to engage in the upward income manipulation than their only-domestic counterparts. To increase the reported income, 159 of 272 firm-years have the positive residual of cash flow from operation, suggesting these multinational firms engaged in the accelerated sales promotion, and the 162 observations with the positive residual of production cost indicate that these multinational firms intentionally deflated the unit fixed cost by overproduction. A half of the firm-years (136 observations) deliberately reduced the discretionary expenses, and the 139 observations with the positive abnormal gain on asset sales indicate that these multinational firms engaged in the asset sales manipulation to increase their income numbers.

Table 10 presents the descriptive statistics of the multinational firms. The mean ETR and CETR of 0.1719 and 0.2104 are lower than the nominal corporate income tax rates in Thailand, which ranged from 30% in 2011 to 20% in 2014. The

median ETR and CETR of 0.1560 and 0.1690 indicate that most of the multinational firms pay the corporate income tax at lower rates than the nominal corporate income tax rates. The mean INS of 0.1200 indicates that the institutional investors' shareholding accounts for 12% of the multinational firms' shares. The zero median FM suggests that most of the multinational firms are non-family firms. The value of corporate governance is 1.00 at the 25th percentile, suggesting that nearly all of the multinational firms implement corporate governance. The mean CONS of 3.3598 is greater than Altman's Z-score (2.675), indicating that most of the multinational firms are in sound financial health. The median BOI of 1.0000 indicates that more than half of the multinational firms receive tax privilege under the investment promotion. The mean and median LEV of 0.1977 and 0.1162 indicate that more than half of the multinational firms carry a low debt level in their capital structure.

This section aims to test whether firms' multinational characteristic influences the association between real earnings management and corporate income tax planning. The study has modified equation (7) by incorporating the interaction term between real earning management (REM) and multinational firm (MNF) in the model and runs the cross-sectional regression for the effective tax rate (ETR) and the cash effective tax rate (CETR) on the real earnings management proxies (R_CFO, R_PROD, R_EXP, R_GAIN, RM_1, RM_2) and the control variables. The negative coefficients of the interaction term between the real earnings management proxies and multinational firms indicate that the multinational firms concurrently engage in the real earnings management activities to manage the earnings upward and in corporate income tax planning, thus resulting in the lower tax cost.

In Table 11, the negative association between R_EXP and ETR is statistically insignificant, while the interaction term R_EXP and MNF is significantly negatively associated with ETR. This finding indicates that the significantly negative association between R_EXP and ETR is influenced by the firms' multinational characteristic. Moreover, the results reveal the insignificant coefficient of the interaction between R_CFO and MNF, suggesting no influence of firms' multinational characteristic on the association between real earnings management through sales manipulation and corporate income tax planning. In the table, the negative coefficients of the interaction terms R_RROD and MNF (-0.0618) and R_EXP and MNF (-0.0920) are significant at the 5% level, indicating the influence of firms' multinational characteristic on the association between corporate income tax planning and real earnings management through overproduction and discretionary expenses reduction, thus supporting H₂ and H₃. The results suggest that, due to the greater flexibility to shift incomes and to structure complex transactions for tax purposes, the multinational firms that engage in real earnings management through overproduction and discretionary expenses reduction benefit from the greater corporate income tax reduction. The interaction term R_GAIN and MNF is not significantly associated with ETR. Furthermore, the interaction terms RM_1 and MNF (-0.0390) and RM_2 and MNF (-0.0593) are significantly negative at the 5% level.

In Table 12, the significantly positive coefficients of R_PROD and R_EXP indicate that, in the absence of the multinational characteristic, boosting the income via both manipulation methods contributes to the additional corporate income tax. In addition, the interaction term R_CFO and CETR is statistically insignificant. The

coefficients of the interaction terms R_RROD and MNF (-0.1597), R_EXP and MNF (-0.2844), RM_1 and MNF (-0.1182), and RM_2 and MNF (-0.1670) are negatively significant at the 1% level. The findings are consistent with Table 11 in that the multinational firms with real earnings management through overproduction and discretionary expenses reduction have the greater use of corporate income tax planning to lower the corporate income tax cost.

Since multinational firms have foreign subsidiaries located in different tax jurisdictions, they are offered a multitude of choices to plan their corporate income tax. Therefore, the increase in the income by real earnings management activities does not necessarily translate into the proportionate increase in the corporate income tax. In other words, the engagement in overproduction or the discretionary expenses cut of the subsidiary located in a lower tax rate country helps achieve the earnings target with a minimal rise in the corporate income tax cost. The absence of the influence of firms' multinational characteristic on the association between R_CFO and corporate income tax planning (ETR and CETR) is probably attributable to the fact that the cost of transferring sales to a subsidiary located in a lower tax rate jurisdiction and then to the customer is greater than the benefit to be realized from corporate income tax planning. The tax savings through asset sales is likely to be limited if the asset is the income-generating asset. Thus, this current research finds no influence of firms' multinational characteristic on the association between corporate income tax planning and real earnings management through asset sales.

4.2.3 THE INFLUENCE OF TAX LOSS CARRYFORWARDS ON THE ASSOCIATION BETWEEN CORPORATE INCOME TAX PLANNING AND REM

Table 13 tabulates the means and medians of ETR and CTR of firms with and without tax loss carryforwards by sector and year. By comparison, the means and medians of firms with tax loss carryforwards are lower than those of firms without tax loss carryforwards in all sectors. By year, the means and medians of firms with tax loss carryforwards are also lower than those of firms without tax loss carryforwards. The findings suggest that most firms with tax loss carryforwards benefit from the tax loss carryforwards through the reduction in corporate income tax expenses in the current period.

Table 14 tabulates the number of firm-years of firms with tax loss carryforwards that engage in the real earnings management activities. The greater positive residual indicates the greater use of real earnings management to boost the earnings. In the table, most firms with tax loss carryforwards have the positive residual for the all real earnings management activities, suggesting that the majority of these firms opted for the real earnings management activities to boost the income.

Table 15 presents the descriptive statistics of firms with tax loss carryforwards. The mean ETR and CETR of 0.1682 and 0.1826 are lower than the nominal corporate income tax rates in Thailand, ranging from 30% in 2011 to 20% in 2014. The median ETR and CETR are 0.1237 and 0.1353, respectively. The means

and medians suggest that most firms with tax loss carryforwards benefit from the tax loss carryforwards in the form of lower corporate income tax. The median FM of 1.0000 indicates that more than half of the firms with tax loss carryforwards are family-owned firms. The median CONS of 2.6304, which is below Altman's Z-score of 2.675, indicates that more than half of the firms with tax loss carryforwards are under financial distress. The median BOI of 0.0000 indicates that more than half of the firms with tax loss carryforwards receive no investment-promotion tax incentive.

In Tables 16 and 17, the significantly negative coefficients of R_EXP and R_GAIN found in the previous results (table 6 and 7) disappear while the coefficients of the interaction terms between real earnings management proxies and tax loss carryforwards exhibit the significantly negative association, suggesting that the association between corporate income tax planning and real earnings management is influenced by tax loss carryforwards characteristic. The negative coefficients of the interaction term R_GAIN and NOL on ETR and CETR (-0.4712 and -0.4683) are statistically significant at the 5% and 10% level, respectively. The results support Hc₄ and imply that firms with tax loss carryforwards engage in income tax planning to offset the tax loss against the incremental income through asset sale manipulation. The significantly negative coefficients of the interaction terms R_PROD and NOL and R_EXP and NOL (-0.1113 and -0.1702) on CETR at the 1% level (Table 17) support Hc₂ and Hc₃ in that firms with tax loss carryforwards engage in the overproduction and discretionary expense activities to boost the reported income due to the ability to offset the tax loss benefit against the additional taxable income.

The findings suggest that firms with tax loss benefits manipulate the income upward through these real earnings management techniques with minimal increase in the corporate income tax owing to the strategic corporate income tax planning. Since real earnings management through sales manipulation affects the long term cash flow and future sales following the shift of future sales transactions to the current period, the firms with tax loss carryforwards, given the financial constraints, tend to opt against the sales manipulation technique to safeguard their financial position.

4.3 ROBUSTNESS TEST

To test the robustness of the measures of corporate income tax planning, this research has employed the excess effective tax rate (XETR) and the excess cash effective tax rate (XCETR). According to Huseynov and Klamm (2012), the excess effective tax rate captures the proportion of tax rate that is not associated with normal firm characteristics. Specifically, this current research first estimates the expected effective tax rate and the expected cash effective tax rate for each year using the following equation. The excess effective tax rate (XETR) and the excess cash effective tax rate (XCETR) are then calculated as the actual value minus the expected value.

$$\begin{aligned} \text{ETR}_{it} \text{ or } \text{CETR}_{it} = & \alpha_0 + \beta_1 \log A_{it} + \beta_2 \text{DE}_{it} + \beta_3 \text{DI}_{it} + \beta_4 \text{MB}_{it} + \beta_5 \text{INS}_{it} + \beta_6 \text{ROA}_{it} \\ & + \beta_7 \text{CAPX}_{it} + \text{IndustryDummies} + \varepsilon_{it} \end{aligned} \quad (10)$$

where ETR_{it} and $CETR_{it}$ are the expected effective tax rate and expected cash effective tax rate, $\log A_{it}$ is the natural logarithm of the total assets for firm i at the end of year t , DE_{it} is the debt to equity ratio for firm i in year t , MB_{it} is the market to book ratio for firm i in year t , DI_{it} is the dividend indicator for firm i in year t , which is coded 1 if there is dividend payment in that year and 0 otherwise. INS_{it} is the proportion of institutional ownership for firm i in year t , ROA is the return on assets for firm i in year t , and $CAPX$ is the capital expenditures divided by total assets for firm i in year t . $XETR$ and $XCETR$ are incorporated into equations (7), (8) and (9) and the cross-sectional regression carried out.

Tables 18 and 19 tabulate the robustness test results for Ha_1 - Ha_4 . In Table 18, the negative coefficients of R_EXP and R_GAIN (-0.0495 and -0.3242) are statistically significant at the 5% level. The findings support Ha_3 and Ha_4 and validate the main test results (Table 6) in that firms engaging in real earnings management through the discretionary expenses reduction and accelerated asset sales have the greater use of corporate income tax planning. Consistent with R_EXP , the coefficient of RM_1 is slightly statistically significant. However, this current research found no association between the real earnings proxies and $XCETR$ (Table 19).

Tables 20 and 21 tabulate the robustness test results for Hb_1 - Hb_4 . In Table 20, the statistically significant association between R_EXP and $XETR$, given the interaction term between the real earnings proxies and multinational firms, suggests that the association between real earnings management and corporate income tax planning is influenced by firms' multinational characteristic. The findings support

Hb₂ and Hb₃ and validate the results in Tables 11 and 12 in that firms' multinational characteristic influences the association between corporate income tax planning and real earnings management through overproduction and discretionary expenses reduction. The significantly negative coefficients of interaction terms R_PROD and MNF and R_EXP and MNF (-0.0773 and -0.1128) at the 1% level indicate that the multinational firms that actively engage in real earnings management through the overproduction and discretionary expense cut activities have the greater use of corporate income tax planning. In addition, the interaction terms RM_1 and MNF and RM_2 and MNF exhibit the significantly negative associations (-0.0498 and -0.0764). Consistent with the XETR findings, Table 21 shows the significantly negative associations of the interaction terms R_PROD and MNF, R_EXP and MNF, RM_1 and MNF and RM_2 and MNF, with XCETR of -0.1687, -0.2956, -0.1210 and -0.1648, respectively.

Tables 22 and 23 present the robustness test results for Hc₁- Hc₄. In Table 22, the significantly negative associations between R_EXP and XETR and R_GAIN and XETR, given firms' tax loss carryforwards (NOL), suggest that tax loss carryforwards influence the associations between these real earnings management methods and corporate income tax planning. The significantly negative coefficients of the interaction terms R_PROD and NOL, R_EXP and NOL and R_GAIN, and NOL (-0.0542, -0.0590 and -0.4639) at the 5% and 10% level respectively support Hc₂, Hc₃ and Hc₄ in the main test. The findings indicate that firms with tax loss carryforwards that engage in the overproduction, discretionary expenses cut and accelerated asset sales techniques to boost the reported income also implement corporate income tax

planning to exploit the tax loss benefit. The results in Tables 22 and 23 are comparable in that the negative coefficients of the interaction terms R_PROD and NOL, R_EXP and NOL, and R_GANI and NOL on XCETR (-0.1283, -0.1739 and -0.4714) are statistically significant.

Overall, the robustness test results validate H_{a3} , H_{a4} , H_{b2} , H_{b3} , H_{c2} , H_{c3} and H_{c4} . There exist the association between corporate income tax planning and real earnings management through discretionary expenses cut and asset sales. However, the extent of the association is influenced by firm characteristics, i.e. a multinational firm or a firm with tax loss carryforwards. Owing to the complex structure and ability to shift income, multinational firms are presented with more opportunity to engage in corporate income tax planning. In fact, the multinational firms utilizing the overproduction and discretionary expenses cut methods to manipulate the income numbers pay lower corporate income tax. In addition, firms with tax loss carryforwards would take advantage of the tax loss benefit by offsetting it against the incremental income from the real earnings manipulations through overproduction, discretionary expense reduction and asset sales.

4.4 SUMMARY OF THE RESULTS

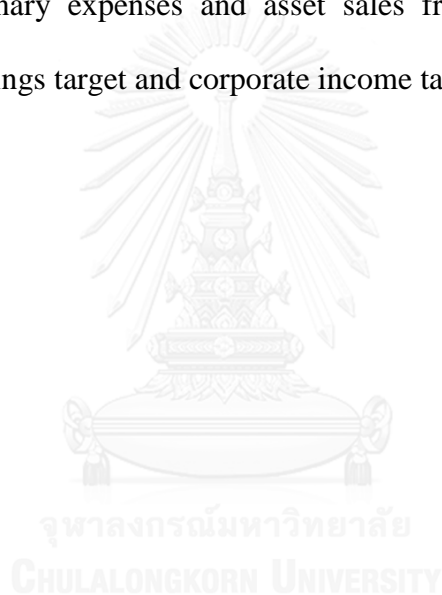
Table 24 summarizes and compares the analysis results of the main and robustness tests of this empirical research. On the association between corporate income tax planning and REM, the negative coefficients of R_EXP and R_GAIN in the ETR model statistically significant, while only the negative coefficient of

R_GAIN is statistically significant in the CETR model. Both aggregate measures of real earnings management (RM_1 and RM_2) are statistically significant in the ETR model but the CETR model. In the robustness test, corporate income tax planning is significantly negatively associated with R_EXP, R_GAIN and RM_1 in the XETR model. The findings suggest that firms that actively manipulate incomes through the discretionary expenses reduction and asset sales would increasingly engage in corporate income tax planning to reduce the corporate income tax cost. However, the associations are influenced by firms' characteristics, i.e. either a multinational firm or a firm with tax loss carryforwards.

On the influence of firms' multinational characteristic on the association between corporate income tax planning and REM, the main tests reveal the significantly negative association of the interaction terms R_PROD and MNF and R_EXP and MNF in both the ETR and CETR models. Moreover, the interaction terms RM_1 and MNF and RM_2 and MNF show the significant association with both ETR and CETR. The robustness test results of the XETR and XCETR models are identical to those of the main tests. The findings reveal that the multinational firms that engage in real earnings management activities through overproduction and discretionary expenses reduction concurrently engage in tax planning to strategically reduce the corporate income tax payment.

On the influence of tax loss carryforwards on the association between corporate income tax planning and REM, the results are similar between the main and robustness tests. The interaction term R_PROD and NOL is significantly negatively

associated with corporate income tax planning in the CETR, XETR and XCETR models. The interaction term R_EXP and NOL is significantly negatively associated with corporate income tax planning in the CETR, XETR and XCETR models. In addition, the significantly negative association exists between the corporate income tax planning and the interaction term R_GAIN and NOL across the four models (the ETR, CETR, XETR and XCETR models). The findings suggest that firms with tax loss carryforwards exploit the tax loss benefit by deliberately deviating the production, discretionary expenses and asset sales from the normal operation to achieve both the earnings target and corporate income tax savings.



CHAPTER V

CONCLUSION

This research provides empirical evidence on the association between real earnings management and corporate income tax planning of Thai listed companies over the period of 2011-2014. It also investigates the influences of firms' multinational characteristic and tax loss carryforwards on the association between real earnings management and corporate income tax planning. The effective tax rate (ETR) and the cash effective tax rate (CETR) are utilized as the measures of corporate income tax planning. The measures are capable of capturing the use of corporate income tax planning to lower the total corporate income tax expenses while maintaining the book income.

In the study, four real earnings management activities are examined: sales manipulation, overproduction, reduction of discretionary expenses, and fixed and investment assets sale. The abnormal levels of real transactions as the proxies of real earnings management are estimated by the cross-sectional model proposed in (Roychowdhury 2006; Herrmann et al. 2003; Gunny 2010). The abnormally high levels of production cost and gain on asset sales indicate the active engagement in the real earnings management activities to increase the reported income. Likewise, the abnormally low levels of cash flow from operation and discretionary expenses indicate the active engagement in the real earnings management activities to boost the reported income.

The findings reveal the association between corporate income tax planning and real earnings management through discretionary expenses reduction and asset sale manipulation, supporting Ha₃ and Ha₄. However, the association disappears with the incorporation of the interaction terms between the real earnings management proxies and multinational firms and between the real earnings management proxies and firms with tax loss carryforwards in the analysis models, suggesting that the association between real earnings management and corporate income tax planning are influenced by both firms' characteristics.

In addition, the results support Hb₂ and Hb₃, indicating that, due to the greater flexibility with regard to corporate income tax planning, the multinational firms' implementation of real earnings management through overproduction and discretionary expenses reduction to boost the income does not necessarily translate into the proportionate increase in the corporate income tax cost. Moreover, firms with tax loss carryforwards take advantage of the tax loss benefit to offset the incremental income from real earnings manipulation (through overproduction, discretionary expenses reduction and fixed and investment assets sales) to meet the earnings target and also lower the corporate income tax cost, supporting Hc₂, Hc₃ and Hc₄. Importantly, the findings verify the robustness of the measures of corporate income tax planning.

This study is expected to contribute to existing literature on real earnings management and on corporate income tax planning with the empirical evidence on the association between real earnings management and corporate income tax

planning; and with the findings on the influence of firms' characteristics, i.e. multinational firms and firms with tax loss carryforwards, on the association between real earnings management and corporate income tax planning. In addition, the study is expected to contribute to more informed decisions among investors because the higher reported income numbers could in fact be the product of real earnings management and corporate income tax planning. Moreover, despite the ever-increasing internationalization of Thai firms, the current tax laws essentially fail to stop or discourage the multinational firms' engaging in corporate income tax planning. Plus, the taxation based on the consolidated income inadvertently promotes income tax planning through the use of tax loss benefit. It is thus hoped that the findings would bring about change in the current taxation to narrow, or even close, the loopholes through, e.g. the general anti-tax avoidance rules, specific transfer pricing rules, and thin capitalization rules.

This research nonetheless contains certain limitations. First, there exist other measurements of corporate income tax planning that cannot be directly measured due to the complexity and informational unavailability. Thus, similar to the prior studies, this current research has utilized the effective tax rate (ETR) and the cash effective tax rate (CETR) as the measurements of corporate income tax planning. Both measures can gauge the extent of book-tax nonconforming tax planning, given that the managers are motivated by either the capital market incentive or income-based incentive, to reduce the corporate income tax cost while boosting the reported income. Thus, the ETR and CETR should be lower for firms that engage in corporate income tax planning, vis-à-vis their non-engaging counterparts. Nevertheless, if the

managers have no incentive to report higher income, they would lack the motivation to manipulate both the book and taxable income, undermining the usefulness of the ETR and CETR measures. Another limitation lies in the fact that the analysis accounts for only firms with positive net income before tax to allow for comparison across firms. This however does not mean that firms with negative income before tax would not engage in real earnings management and corporate income tax planning activities. Rather, these firms are presented with less incentive to manipulate the taxable income. The final limitation is associated with the low test power, necessitating the inferences of the findings.

According to Graham et al. (2011), the corporate income tax rates and repatriation of foreign earnings are two important factors in the selection of the subsidiary location. Future research should thus examine the effect of the ASEAN Economic Community (AEC) on the corporate income tax planning practices. Despite its full economic integration on the final day of 2015, vast differences exist in the tax law, tax policy and tax rates among the bloc members. The differences offer an opportunity for businesses to avoid tax through tax planning, such as the shifting of income to a lower tax jurisdiction and the transfer pricing. To address, the Thai regulators plan to enact the specific transfer pricing rules in which firms are required to disclose their transfer pricing information within 150 days after the end of the accounting period. According to Hope et al. (2013), the detailed tax disclosure limits the firm's ability to mask tax avoidance behavior. However, it remains to be seen whether the new disclosure requirement would limit corporate income tax avoidance behaviors.

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APPENDIX

VARIABLE DEFINITIONS

ETR_{it} = the effective tax rate for firm i in year t , calculated as the annual tax expenses excluding deferred tax divided by the annual pre-tax income less special items.

$CETR_{it}$ = the cash effective rate for firm i in year t , calculated as the cash taxes paid divided by the pre-tax income less special items.

$XETR_{it}$ = the excess effective tax rate for firm i in year t , calculated as the actual ETR minus the estimated ETR from Eq.(10).

$XCETR_{it}$ = the excess cash effective rate for firm i in year t , calculated as the actual $CETR$ minus the estimated $CETR$ from Eq.(10).

R_CFO_{it} = the abnormal cash flow from operation for firm i in year t , computed as the actual CFO minus the estimated CFO from Eq.(3) and then multiplied by negative one.

R_PROD_{it} = the abnormal production cost for firm i in year t , computed as the actual production cost minus the estimated production cost from Eq.(4).

R_EXP_{it} = the abnormal discretionary expense for firm i in year t , computed as the actual sales and administrative expenses minus the estimated sales and administrative expenses from Eq.(5) and then multiplied by negative one.

R_GAIN_{it} = the abnormal gain on asset sales for firm i in year t , computed as the actual gain on asset sales minus the estimated gain on assets sales from Eq.(6).

RM_1_{it} = the sum of R_PROD and R_EXP for firm i in year t .

RM_2_{it} = the sum of R_CFO and R_EXP for firm i in year t .

FM_{it} = the family ownership for firm i in year t , coded 1 if the family ownership is greater than or equal to 25% and family members are on the company board and 0 otherwise.

INS_{it} = the institutional ownership proportion for firm i in year t , measured as the proportion of shares owned in each firm by institutional shareholders.

CG_{it} = the corporate governance score for firm i in year t , coded 1 for firms with 3-5 CG stars and 0 otherwise.

$CONS_{it}$ = the financial constraint for firm i in year t , the measurement is based on Altman's Z-score (Altman, 1968).

MNF_{it} = the multinational characteristic of firm i in year t , coded 1 for firms with a foreign subsidiary and 0 otherwise.

BOI_{it} = the tax holiday for firm i in year t , coded 1 for firms with tax holiday and 0 otherwise.

LEV_{it} = the leverage ratio for firm i in year t , measured as the long-term debt scaled by the lagged assets.

$SIZE_{it-1}$ = the natural logarithm of the total assets for firm i at the beginning of year t .

MB_{it-1} = the market-to-book ratio for firm i at the beginning of year t , measured as the market value of equity scaled by the book value of equity.

ROA_{it} = the return on assets for firm i in year t , measured as the operating income scaled by the lagged assets.

NOL_{it} = an indicator variable, coded 1 if the tax loss carryforward for firm i in year $t-1$ is greater than 0, and 0 otherwise.

PPE_{it} = the property, plant and equipment for firm i in year t , scaled by the lagged assets.

INT_{it} = the intangible assets for firm i in year t , scaled by the lagged assets.

EQI_{it} = the equity income in earnings for firm i in year t , scaled by the lagged assets.



LIST OF TABLES

Table 1 Sample selection process

Panel A: Sample selection from listed firms in the Stock Exchange of Thailand between 2011-2014		
	N	%
Number of firm-years from 2011-2014	2,086	
Rehabilitation and possible delisting firms	(109)	
Financial services and insurance firms	(394)	
Fiscal year not ending on 31 December	<u>(92)</u>	
Subtotal	1,491	100.00
Less: negative income firms	<u>(261)</u>	<u>(17.50)</u>
Final sample	<u><u>1,230</u></u>	<u><u>78.14</u></u>
Panel B: Final sample by sector		
	N	%
Agro & Food Industry	147	11.95
Consumer Products	110	8.94
Industrials	213	17.32
Property & Construction	266	21.63
Resources	103	8.37
Services	276	22.44
Technology	<u>115</u>	<u>9.35</u>
	<u><u>1,230</u></u>	<u><u>100.00</u></u>
Panel C: Final sample by year		
	N	%
2011	307	24.96
2012	301	24.47
2013	312	25.37
2014	<u>310</u>	<u>25.20</u>
	<u><u>1,230</u></u>	<u><u>100.00</u></u>

Table 2 Multinational firms and firms with tax loss carryforward

Panel A: Multinational and only-domestic firms by sector			
	MNF	DF	Total
Agro & Food Industry	40	107	147
Consumer Products	28	82	110
Industrials	50	163	213
Property & Construction	48	218	266
Resources	43	60	103
Services	23	253	276
Technology	40	75	115
	<u>272</u>	<u>958</u>	<u>1230</u>

Panel B: Multinational and only-domestic firms by year			
	MNF	DF	Total
2011	63	244	307
2012	66	235	301
2013	67	245	312
2014	76	234	310
	<u>272</u>	<u>958</u>	<u>1230</u>

Panel C: Firms with and without tax loss carryforwards by sector			
	W/	W/O	Total
Agro & Food Industry	43	104	147
Consumer Products	16	94	110
Industrials	56	157	213
Property & Construction	72	194	266
Resources	37	66	103
Services	69	207	276
Technology	33	82	115
	<u>326</u>	<u>904</u>	<u>1230</u>

Panel D: Firms with and without tax loss carryforward by year			
	W/	W/O	Total
2011	87	220	307
2012	85	216	301
2013	72	240	312
2014	82	228	310
	<u>326</u>	<u>904</u>	<u>1230</u>

Table 3 Corporate income tax planning and real earnings management

Panel A: Effective tax rate (ETR) and cash effective tax rate (CETR) by sector						
	ETR			CETR		
	N	Mean	Median	N	Mean	Median
Agro & Food Industry	147	0.1479	0.1355	147	0.1787	0.1554
Consumer Products	110	0.2030	0.1879	110	0.2304	0.1936
Industrials	213	0.1726	0.1631	213	0.2026	0.1817
Property & Construction	266	0.2377	0.2067	266	0.2741	0.2037
Resources	103	0.2169	0.2165	103	0.2309	0.2014
Services	276	0.2168	0.2062	276	0.2363	0.2172
Technology	115	0.1569	0.1602	115	0.2266	0.1950
	<u>1,230</u>	<u>0.1986</u>	<u>0.1931</u>	<u>1,230</u>	<u>0.2299</u>	<u>0.1983</u>

Panel B: ETR and CETR by year						
	ETR			CETR		
	N	Mean	Median	N	Mean	Median
2011	307	0.2334	0.2566	307	0.2600	0.2316
2012	301	0.1962	0.2049	301	0.2174	0.2049
2013	312	0.1891	0.1795	312	0.2359	0.1933
2014	310	0.1760	0.1777	310	0.2062	0.1801
	<u>1,230</u>	<u>0.1986</u>	<u>0.1931</u>	<u>1,230</u>	<u>0.2299</u>	<u>0.1983</u>

Panel C: The number of firm-years with real earnings management				
	N	Residual > 0	N	Residual ≤ 0
R_CFO	610	49.59%	620	50.41%
R_PROD	612	49.76%	618	50.24%
R_EXP	627	50.98%	603	49.02%
R_GAIN	631	51.85%	586	48.15%
RM_1	605	49.19%	625	50.81%
RM_2	591	48.05%	639	51.95%

All variables are defined in the appendix.

Table 4 Descriptive statistics

Variables ^a	N ^b	Mean	Median	Std. Dev.	P 25	P 75	P 90
ETR	1230	0.1986	0.1931	0.1625	0.0997	0.2498	0.3345
CETR	1230	0.2299	0.1983	0.2035	0.1021	0.2779	0.4267
R_CFO	1230	0.0025	-0.0004	0.1324	-0.0530	0.0534	0.1165
R_PROD	1230	-0.0153	-0.0008	0.2406	-0.0703	0.0660	0.1379
R_EXP	1230	-0.0210	0.0008	0.1611	-0.0434	0.0348	0.0717
R_GAIN	1217	0.0015	0.0000	0.0252	-0.0003	0.0004	0.0034
RM_1	1230	-0.0363	-0.0022	0.3634	-0.1016	0.0933	0.1909
RM_2	1230	-0.0185	-0.0054	0.2035	-0.0824	0.0717	0.1469
FM	1230	0.6146	1.0000	0.4869	0.0000	1.0000	1.0000
INS	1230	0.0710	0.0201	0.1225	0.0000	0.0917	0.2037
CG	1230	0.7293	1.0000	0.4445	0.0000	1.0000	1.0000
CONS	1230	5.3280	3.0916	19.7086	1.9957	5.0374	8.4308
MNF	1230	0.2211	0.0000	0.4152	0.0000	0.0000	1.0000
BOI	1230	0.4382	0.0000	0.4964	0.0000	1.0000	1.0000
LEV	1230	0.1624	0.0835	0.2487	0.0269	0.2371	0.3956
SIZE	1230	22.2908	22.0460	1.4695	21.2386	23.1467	24.3252
MB	1230	2.8351	1.5750	10.1006	0.9600	2.8000	4.8159
NOL	1230	0.1167	0.0886	0.2373	0.0447	0.1435	0.2130
ROA	1230	0.2650	0.0000	0.4415	0.0000	1.0000	1.0000
PPE	1230	0.3704	0.3329	0.3271	0.1339	0.5345	0.7303
INT	1230	0.0423	0.0032	0.3632	0.0002	0.0112	0.0549
EQI	1230	0.0055	0.0000	0.0235	0.0000	0.0015	0.0145

^aAll variables are defined in the appendix.

^bThe final number of observations is different according to the specific data requirement.

Table 5 Pearson (lower triangle) and Spearman (upper triangle)

	ETR	CETR	R_CFO	R_PROD	R_EXP	R_GAIN	RM_1	RM_2	FM	INS	CG	CONS	MNF	BOI	LEV	SIZE	MB	ROA	NOL	PPE	INT	EQI	
ETR	0.6763																						
CETR	0.6643	0.6763																					
R_CFO	0.0302	0.0507	0.6643																				
R_PROD	-0.0133	0.0105	0.2253	0.6763																			
R_EXP	-0.0338	-0.0209	-0.0494	0.6222	0.6763																		
R_GAIN	-0.0616	-0.0557	0.1983	0.0158	-0.0114	0.6763																	
RM_1	-0.0238	-0.0023	0.1273	0.9379	0.8551	0.6763	0.7548																
RM_2	-0.0071	0.0164	0.6115	0.6395	0.7601	0.1200	0.7603	0.0004															
FM	0.0146	-0.0143	0.0343	0.0250	-0.0340	0.0032	0.0015	-0.0047	0.6763														
INS	-0.0227	-0.0481	-0.0928	-0.0555	0.0182	0.0147	-0.0287	-0.0459	-0.2490	0.1866													
CG	0.0179	-0.0086	-0.0609	-0.0216	0.0091	-0.0227	-0.0103	-0.0325	-0.0165	0.1769	0.0285	0.0983	0.0923	0.0873	0.1209	0.2221	0.0882	0.0843	-0.0651	-0.0702	0.1268	0.0856	
CONS	0.0656	0.0609	-0.0288	-0.0174	0.0243	-0.0075	-0.0007	0.0005	0.0608	-0.0554	0.0031	-0.1435	-0.1435	-0.221	-0.5337	-0.2785	0.2538	0.5097	-0.1306	0.0177	0.0883	-0.0646	
MNF	-0.0735	-0.0571	0.0983	0.0074	-0.0410	0.0143	-0.0133	0.0315	-0.1225	0.2129	0.0983	-0.0543	-0.0543	0.2133	0.0741	0.3285	0.0344	-0.0714	0.0657	0.0008	0.1323	0.1155	
BOI	-0.2149	-0.1997	-0.0333	0.0111	0.0058	-0.0560	0.0099	-0.0170	0.0487	0.0658	0.0873	0.0362	0.2133	0.0830	0.2081	0.2081	0.0539	-0.0022	0.0477	0.1985	0.1292	0.0090	
LEV	0.0155	0.0084	0.1806	-0.0347	-0.0856	0.2162	-0.0609	0.0497	-0.0265	0.1558	0.1049	-0.0873	0.0695	0.0541		0.4327	0.1040	-0.1310	0.0507	0.1397	0.1682	0.1692	
SIZE	-0.0764	-0.0939	-0.0158	0.0514	0.0845	0.0239	0.0715	0.0566	-0.1550	0.4991	0.2336	-0.0870	0.3573	0.2136	0.2888		0.2145	-0.0610	0.0272	-0.0575	0.1490	0.2193	
MB	-0.0463	-0.0537	0.0201	0.0278	-0.0287	0.0021	0.0057	-0.0096	-0.0254	-0.0041	-0.0323	0.0022	-0.0101	-0.0063	0.0354	0.0047		0.4615	-0.0350	0.1072	0.3498	0.0762	
ROA	-0.0738	-0.1091	-0.0474	-0.0456	-0.1624	0.1145	-0.1021	-0.1595	0.0350	0.0366	-0.0250	0.0205	-0.0276	0.0206	0.2066	-0.0479	0.0564		-0.1475	0.0527	0.2079	0.1001	
NOL	-0.1182	-0.1433	0.0392	0.0359	-0.0076	0.0575	0.0204	0.0195	-0.0973	-0.0236	-0.0651	0.0431	0.0657	0.0477	0.0072	0.0325	0.0200	-0.0642		0.0710	-0.0324	0.0003	
PPE	-0.0425	-0.0404	-0.0756	-0.1964	-0.2264	-0.0567	-0.2304	-0.2286	0.0416	-0.0343	-0.0371	-0.0043	-0.0065	0.1742	0.3749	-0.0450	0.0415	0.2041	0.0466			0.2329	-0.0363
INT	-0.0299	-0.0248	0.0732	0.1368	-0.2444	-0.0023	-0.0177	-0.1460	0.0330	0.0120	-0.0034	-0.0096	0.0047	0.0206	0.1794	0.0041	0.0357	0.7441	-0.0125	0.1510		0.0597	
EQI	-0.1386	-0.1278	-0.0627	0.0377	0.0188	-0.0065	0.0333	-0.0259	-0.0591	0.0464	0.0678	-0.0026	0.0071	0.0561	0.0852	0.1153	0.0042	0.0184	0.0036	-0.0755	0.0518		

Bolded coefficients are significant level at <0.05 (two-tailed test).

All variables are defined in the appendix.

Table 6 The association between REM and ETR

$$\begin{aligned} \text{ETR}_{it} = & \alpha_0 + \beta_1 \text{REM}_{it} + \beta_2 \text{FM}_{it} + \beta_3 \text{INS}_{it} + \beta_4 \text{CG}_{it} + \beta_5 \text{CONS}_{it} + \beta_6 \text{MNF}_{it} + \beta_7 \text{BOI}_{it} + \beta_8 \text{LEV}_{it} \\ & + \beta_9 \text{SIZE}_{it-1} + \beta_{10} \text{MB}_{it-1} + \beta_{11} \text{ROA}_{it} + \beta_{12} \text{NOL}_{it} + \beta_{13} \text{PPE}_{it} + \beta_{14} \text{INT}_{it} + \beta_{15} \text{EQI}_{it} \\ & + \text{IndustryDummies} + \text{YearDummies} + \varepsilon_{it}, \end{aligned}$$

Independent variables ^a	Exp. Sign	ETR ^a					
		(1)	(2)	(3)	(4)	(5)	(6)
Intercept		0.2955***	0.2933***	0.2777***	0.3680***	0.2875***	0.2921***
R_CFO	-	0.0022					
R_PROD	-		-0.0158				
R_EXP	-			-0.0531**			
R_GAIN	-				-0.3759***		
RM_1	-					-0.0165*	
RM_2	-						-0.0318**
FM	+	0.0037	0.0039	0.0036	0.0051	0.0039	0.0039
INS	-	-0.0321	-0.0350	-0.0353	-0.0149	-0.0360	-0.0375
CG	+	0.0068	0.0064	0.0062	0.0054	0.0062	0.0057
CONS	+	0.0008**	0.0008**	0.0008**	0.0008**	0.0008**	0.0008***
MNF	-	0.0012	0.0012	-0.0001	0.0016	0.0007	0.0017
BOI	-	-0.0574***	-0.0570***	-0.0559***	-0.0578***	-0.0565***	-0.0567***
LEV	+	0.0125	0.0138	0.0131	0.0269*	0.0139	0.0186
SIZE	-	-0.0025	-0.0023	-0.0017	-0.0058*	-0.0020	-0.0023
MB	-	-0.0007***	-0.0007***	-0.0007***	-0.0007***	-0.0007***	-0.0007***
ROA	-	-0.1008***	-0.1055***	-0.0973***	-0.0915***	-0.1046***	-0.1031***
NOL	-	-0.0443***	-0.0441***	-0.0443***	-0.0437***	-0.0441***	-0.0441***
PPE	?	0.0039	0.0007	-0.0021	-0.0046	-0.0012	-0.0026
INT	?	0.0406*	0.0445*	0.0336	0.0340*	0.0424	0.0391
EQI	-	-0.8302***	-0.8315***	-0.8284***	-0.8150***	-0.8307***	-0.8446***
Industry fixed effects included		Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects included		Yes	Yes	Yes	Yes	Yes	Yes
N ^b		1230	1230	1230	1217	1230	1230
R-squared		0.1354	0.1358	0.1378	0.1415	0.1366	0.1368
F-stat		9.19***	9.26***	9.80***	9.25***	9.47***	9.44***

*, **, *** indicate significant level at the .10, .05, and .01, respectively.

REM are the real earnings management proxies consisting of four individual measures (R_CFO, R_PROD, R_EXP, and R_GAIN) and two aggregate measures (RM_1 and RM_2).

^aAll variables are defined in the appendix.

^bThe final number of observations in each model is different according to the specific data requirement.

Table 7 The association between REM and CETR

$$\begin{aligned} \text{CETR}_{it} = & \alpha_0 + \beta_1 \text{REM}_{it} + \beta_2 \text{FM}_{it} + \beta_3 \text{INS}_{it} + \beta_4 \text{CG}_{it} + \beta_5 \text{CONS}_{it} + \beta_6 \text{MNF}_{it} + \beta_7 \text{BOI}_{it} + \beta_8 \text{LEV}_{it} \\ & + \beta_9 \text{SIZE}_{it-1} + \beta_{10} \text{MB}_{it-1} + \beta_{11} \text{ROA}_{it} + \beta_{12} \text{NOL}_{it} + \beta_{13} \text{PPE}_{it} + \beta_{14} \text{INT}_{it} + \beta_{15} \text{EQI}_{it} \\ & + \text{IndustryDummies} + \text{YearDummies} + \varepsilon_{it}, \end{aligned}$$

Independent variables ^a	Exp. Sign	CETR ^a					
		(1)	(2)	(3)	(4)	(5)	(6)
Intercept		0.5076***	0.5112***	0.5015***	0.5762***	0.5085***	0.5099***
R_CFO	-	0.0162					
R_PROD	-		0.0001				
R_EXP	-			-0.0283			
R_GAIN	-				-0.3405**		
RM_1	-					-0.0052	
RM_2	-						-0.0107
FM	+	-0.0134	-0.0133	-0.0134	-0.0122	-0.0132	-0.0132
INS	-	-0.0515	-0.0532	-0.0548	-0.0386	-0.0544	-0.0549
CG	+	-0.0050	-0.0053	-0.0056	-0.0070	-0.0055	-0.0057
CONS	+	0.0010**	0.0010**	0.0010**	0.0010**	0.0010**	0.0010**
MNF	-	0.0069	0.0076	0.0068	0.0078	0.0074	0.0077
BOI	-	-0.0694***	-0.0695***	-0.0687***	-0.0705***	-0.0692***	-0.0693***
LEV	+	0.0302	0.0331	0.0332	0.0456	0.0334	0.0350
SIZE	-	-0.0088*	-0.0089**	-0.0085*	-0.0118**	-0.0088**	-0.0088**
MB	-	-0.0012***	-0.0011***	-0.0012***	-0.0011***	-0.0011***	-0.0011***
ROA	-	-0.2161***	-0.2183***	-0.2163***	-0.2083***	-0.2194***	-0.2190***
NOL	-	-0.0734***	-0.0733***	-0.0733***	-0.0731***	-0.0732***	-0.0732***
PPE	?	0.0168	0.0154	0.0122	0.0076	0.0138	0.0132
INT	?	0.0971**	0.0984**	0.0946**	0.0917**	0.0990**	0.0979**
EQI	-	-0.9750***	-0.9827***	-0.9812***	-0.9704***	-0.9825***	-0.9872***
Industry fixed effects included		Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects included		Yes	Yes	Yes	Yes	Yes	Yes
N		1230	1230	1230	1217	1230	1230
R-squared		0.1363	0.1362	0.1366	0.1412	0.1363	0.1363
F-stat		7.25***	7.31***	7.32***	7.53***	7.31***	7.35***

*, **, *** indicate significant level at the .10, .05, and .01, respectively.

REM are the real earnings management proxies consisting of four individual measures (R_CFO, R_PROD, R_EXP, and R_GAIN) and two aggregate measures (RM_1 and RM_2).

^aAll variables are defined in the appendix.

^bThe final number of observations in each model is different according to the specific data requirement.

Table 8 ETR and CETR of multinational and only-domestic firms

Panel A: ETR by sector						
	MNF			DF		
	N	Mean	Median	N	Mean	Median
Agro & Food Industry	40	0.1512	0.1419	107	0.1467	0.1297
Consumer Products	28	0.1454	0.1258	82	0.2227	0.2082
Industrials	50	0.1954	0.1635	163	0.1656	0.1631
Property & Construction	48	0.1953	0.2015	218	0.2470	0.2074
Resources	43	0.2434	0.2285	60	0.1978	0.1747
Services	23	0.2671	0.2094	253	0.2122	0.2061
Technology	40	0.0710	0.0484	75	0.2027	0.2086
	<u>272</u>	<u>0.1791</u>	<u>0.1560</u>	<u>958</u>	<u>0.2041</u>	<u>0.1980</u>

Panel B: ETR by year						
	MNF			DF		
	N	Mean	Median	N	Mean	Median
2011	63	0.2123	0.1944	244	0.2388	0.2680
2012	66	0.1735	0.1533	235	0.2025	0.2086
2013	67	0.1571	0.1390	245	0.1978	0.1853
2014	76	0.1757	0.1511	234	0.1761	0.1845
	<u>272</u>	<u>0.1791</u>	<u>0.1560</u>	<u>958</u>	<u>0.2041</u>	<u>0.1980</u>

Panel C: CETR by sector						
	MNF			DF		
	N	Mean	Median	N	Mean	Median
Agro & Food Industry	40	0.1553	0.1489	107	0.1874	0.1576
Consumer Products	28	0.1984	0.1555	82	0.2413	0.2088
Industrials	50	0.2465	0.1984	163	0.1891	0.1774
Property & Construction	48	0.2358	0.1948	218	0.2825	0.2063
Resources	43	0.2445	0.2090	60	0.2212	0.1847
Services	23	0.3086	0.2140	253	0.2297	0.2172
Technology	40	0.1052	0.0553	75	0.2914	0.2470
	<u>272</u>	<u>0.2104</u>	<u>0.1690</u>	<u>958</u>	<u>0.2354</u>	<u>0.2030</u>

Panel D: CETR by year						
	MNF			DF		
	N	Mean	Median	N	Mean	Median
2011	63	0.2452	0.2134	244	0.2638	0.2466
2012	66	0.1996	0.1666	235	0.2223	0.2160
2013	67	0.2042	0.1688	245	0.2445	0.1962
2014	76	0.1965	0.1529	234	0.2093	0.1876
	<u>272</u>	<u>0.2104</u>	<u>0.1690</u>	<u>958</u>	<u>0.2354</u>	<u>0.2030</u>

Table 9 The REM measurements of multinational firms

	Residual > 0		Residual ≤ 0	
	N	%	N	%
R_CFO	159	58.46%	113	41.54%
R_PROD	162	59.56%	110	40.44%
R_EXP	136	50.00%	136	50.00%
R_GAIN	139	52.06%	128	47.94%
RM_1	155	56.99%	117	43.01%
RM_2	152	55.88%	120	44.12%

All variables are defined in the appendix.



Table 10 Descriptive statistics of the multinational firms

Variables ^a	N ^b	Mean	Median	Std. Dev.	P 25	P75	P90
ETR	272	0.1791	0.1560	0.1532	0.0747	0.2293	0.3382
CETR	272	0.2104	0.1690	0.1989	0.0772	0.2556	0.4432
R_CFO	272	0.0257	0.0168	0.1711	-0.0274	0.0625	0.1212
R_PROD	272	-0.0139	0.0186	0.3552	-0.0403	0.0759	0.1440
R_EXP	272	-0.0346	-0.0002	0.2220	-0.0443	0.0317	0.0696
R_GAIN	267	0.0022	0.0000	0.0263	-0.0002	0.0003	0.0040
RM_1	272	-0.0485	0.0211	0.5667	-0.0831	0.0957	0.1905
RM_2	272	-0.0089	0.0234	0.2925	-0.0558	0.0880	0.1582
FM	272	0.4963	0.0000	0.5009	0.0000	1.0000	1.0000
INS	272	0.1200	0.0608	0.1674	0.0065	0.1585	0.2900
CG	272	0.8125	1.0000	0.3910	1.0000	1.0000	1.0000
CONS	272	3.3598	2.5692	2.9183	1.8320	3.8851	5.4455
BOI	272	0.6397	1.0000	0.4810	0.0000	1.0000	1.0000
LEV	272	0.1977	0.1162	0.3417	0.0326	0.3057	0.4274
SIZE	272	23.2967	22.9795	1.6615	22.0787	24.3282	25.5516
MB	272	2.6429	1.7100	3.4590	1.0300	2.9000	4.6890
NOL	272	0.3272	0.0000	0.4701	0.0000	1.0000	1.0000
ROA	272	0.1047	0.0801	0.1541	0.0376	0.1343	0.1780
PPE	272	0.3704	0.3502	0.3390	0.1669	0.5006	0.6448
INT	272	0.0478	0.0053	0.1556	0.0007	0.0326	0.1227
EQI	272	0.0058	0.0000	0.0162	0.0000	0.0087	0.0183

^aAll variables are defined in the appendix.

^bThe final number of observations is different according to the specific data requirement.

Table 11 The influence of firms' multinational characteristic on the association between REM and ETR

$$\begin{aligned} \text{ETR}_{it} = & \alpha_0 + \beta_1 \text{REM}_{it} + \beta_2 \text{REM}_{it} * \text{MNF}_{it} + \beta_3 \text{FM}_{it} + \beta_4 \text{INS}_{it} + \beta_5 \text{CG}_{it} + \beta_6 \text{CONS}_{it} + \beta_7 \text{MNF}_{it} + \beta_8 \text{BOI}_{it} \\ & + \beta_9 \text{LEV}_{it} + \beta_{10} \text{SIZE}_{it-1} + \beta_{11} \text{MB}_{it-1} + \beta_{12} \text{ROA}_{it} + \beta_{13} \text{NOL}_{it} + \beta_{14} \text{PPE}_{it} + \beta_{15} \text{INT}_{it} + \beta_{16} \text{EQI}_{it} \\ & + \text{IndustryDummies} + \text{YearDummies} + \varepsilon_{it}, \end{aligned}$$

Independent variables ^a	Exp. Sign	ETR ^a					
		(1)	(2)	(3)	(4)	(5)	(6)
Intercept		0.2966***	0.2958***	0.2830***	0.3724***	0.2926***	0.2968***
R_CFO	-	0.0134					
R_CFO*MNF	-	-0.0313					
R_PROD	-		0.0122				
R_PROD*MNF	-		-0.0618**				
R_EXP	-			-0.0140			
R_EXP*MNF	-			-0.0920**			
R_GAIN	-				-0.3413**		
R_GAIN*MNF	-				-0.2080		
RM_1	-					0.0029	
RM_1*MNF	-					-0.0390**	
RM_2	-						-0.0063
RM_2*MNF	-						-0.0593**
FM	+	0.0038	0.0042	0.0038	0.0051	0.0041	0.0041
INS	-	-0.0318	-0.0300	-0.0332	-0.0155	-0.0316	-0.0351
CG	+	0.0067	0.0061	0.0058	0.0054	0.0059	0.0054
CONS	+	0.0008***	0.0008***	0.0008***	0.0008**	0.0008***	0.0008***
MNF	-	0.0017	-0.0002	-0.0031	0.0021	-0.0013	0.0005
BOI	-	-0.0573***	-0.0565***	-0.0554***	-0.0579***	-0.0561***	-0.0562***
LEV	+	0.0157	0.0164	0.0142	0.0326*	0.0159	0.0245*
SIZE	-	-0.0025	-0.0023	-0.0017	-0.0060*	-0.0021	-0.0024
MB	-	-0.0007***	-0.0007***	-0.0007***	-0.0007***	-0.0007***	-0.0007***
ROA	-	-0.0970***	-0.1109***	-0.1116***	-0.0891***	-0.1137***	-0.1047***
NOL	-	-0.0443***	-0.0449***	-0.0451***	-0.0438***	-0.0450***	-0.0447***
PPE	?	0.0032	-0.0055	-0.0074	-0.0057	-0.0067	-0.0070
INT	?	0.0381	0.0446*	0.0446*	0.0324*	0.0471*	0.0412*
EQI	-	-0.8359***	-0.8589***	-0.8506***	-0.8282***	-0.8575***	-0.8677***
Industry fixed effects included		Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects included		Yes	Yes	Yes	Yes	Yes	Yes
N ^b		1230	1230	1230	1217	1230	1230
R-squared		0.1355	0.1377	0.1394	0.1416	0.1383	0.1380
F-stat		8.77***	8.80***	9.08***	8.86***	8.90***	8.94***

*, **, *** indicate significant level at the .10, .05, and .01, respectively.

REM are the real earnings management proxies consisting of four individual measures (R_CFO, R_PROD, R_EXP, and R_GAIN) and two aggregate measures (RM_1 and RM_2).

^aAll variables are defined in the appendix.

^bThe final number of observations in each model is different according to the specific data requirement.

Table 12 The influence of firms' multinational characteristic on the association between REM and CETR

$$\begin{aligned} \text{CETR}_{it} = & \alpha_0 + \beta_1 \text{REM}_{it} + \beta_2 \text{REM}_{it} * \text{MNF}_{it} + \beta_3 \text{FM}_{it} + \beta_4 \text{INS}_{it} + \beta_5 \text{CG}_{it} + \beta_6 \text{CONS}_{it} + \beta_7 \text{MNF}_{it} \\ & + \beta_8 \text{BOI}_{it} + \beta_9 \text{LEV}_{it} + \beta_{10} \text{SIZE}_{it-1} + \beta_{11} \text{MB}_{it-1} + \beta_{12} \text{ROA}_{it} + \beta_{13} \text{NOL}_{it} + \beta_{14} \text{PPE}_{it} + \beta_{15} \text{INT}_{it} \\ & + \beta_{16} \text{EQI}_{it} + \text{IndustryDummies} + \text{YearDummies} + \varepsilon_{it}, \end{aligned}$$

Independent variables ^a	Exp. Sign	CETR ^a					
		(1)	(2)	(3)	(4)	(5)	(6)
Intercept		0.5090***	0.5177***	0.5177***	0.5749***	0.5239***	0.5230***
R_CFO	-	0.0306					
R_CFO*MNF	-	-0.0402					
R_PROD	-		0.0724***				
R_PROD*MNF	-		-0.1597***				
R_EXP	-			0.0926**			
R_EXP*MNF	-			-0.2844***			
R_GAIN	-				-0.3505**		
R_GAIN*MNF	-				0.0600		
RM_1	-					0.0536***	
RM_1*MNF	-					-0.1182***	
RM_2	-						0.0611*
RM_2*MNF	-						-0.1670***
FM	+	-0.0133	-0.0126	-0.0125	-0.0122	-0.0124	-0.0126
INS	-	-0.0511	-0.0404	-0.0484	-0.0384	-0.0409	-0.0482
CG	+	-0.0051	-0.0061	-0.0067	-0.0070	-0.0063	-0.0066
CONS	+	0.0010**	0.0010**	0.0010**	0.0010**	0.0010**	0.0010**
MNF	-	0.0075	0.0042	-0.0023	0.0077	0.0014	0.0044
BOI	-	-0.0693***	-0.0685***	-0.0672***	-0.0704***	-0.0682***	-0.0679***
LEV	+	0.0343	0.0398*	0.0364*	0.0440	0.0394*	0.0517**
SIZE	-	-0.0089**	-0.0088**	-0.0086**	-0.0118**	-0.0089**	-0.0092**
MB	-	-0.0012***	-0.0012***	-0.0011***	-0.0011***	-0.0012***	-0.0012***
ROA	-	-0.2114***	-0.2322***	-0.2604***	-0.2090***	-0.2471***	-0.2235***
NOL	-	-0.0734***	-0.0753***	-0.0757***	-0.0730***	-0.0758***	-0.0749***
PPE	?	0.0158	-0.0006	-0.0041	0.0079	-0.0029	0.0007
INT	?	0.0939**	0.0986**	0.1285***	0.0921**	0.1131***	0.1038***
EQI	-	-0.9823***	-1.0535***	-1.0499***	-0.9666***	-1.0638***	-1.0524***
Industry fixed effects included		Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects included		Yes	Yes	Yes	Yes	Yes	Yes
N ^b		1230	1230	1230	1217	1230	1230
R-squared		0.1355	0.1377	0.1394	0.1412	0.1383	0.1380
F-stat		8.77***	8.80***	9.08***	7.25***	8.90***	8.94***

*, **, *** indicate significant level at the .10, .05, and .01, respectively.

REM are the real earnings management proxies consisting of four individual measures (R_CFO, R_PROD, R_EXP, and R_GAIN) and two aggregate measures (RM_1 and RM_2).

^aAll variables are defined in the appendix.

^bThe final number of observations in each model is different according to the specific data requirement.

Table 13 ETR and CETR of firms with and without tax loss carryforwards

Panel A: ETR by sector						
	W/			W/O		
	N	Mean	Median	N	Mean	Median
Agro & Food Industry	43	0.1369	0.1119	104	0.1525	0.1511
Consumer Products	16	0.1899	0.1380	94	0.2052	0.1937
Industrials	56	0.1171	0.0672	157	0.1924	0.1891
Property & Construction	72	0.2098	0.1628	194	0.2481	0.2123
Resources	37	0.2102	0.1268	66	0.2206	0.2177
Services	69	0.1784	0.1764	207	0.2295	0.2134
Technology	33	0.1260	0.1010	82	0.1693	0.1998
	<u>326</u>	<u>0.1682</u>	<u>0.1237</u>	<u>904</u>	<u>0.2095</u>	<u>0.2018</u>

Panel B: ETR by year						
	W/			W/O		
	N	Mean	Median	N	Mean	Median
2011	87	0.1611	0.0972	220	0.2620	0.2827
2012	85	0.1515	0.1268	216	0.2138	0.2179
2013	72	0.1812	0.1379	240	0.1914	0.1856
2014	82	0.1816	0.1258	228	0.1741	0.1868
	<u>326</u>	<u>0.1682</u>	<u>0.1237</u>	<u>904</u>	<u>0.2095</u>	<u>0.2018</u>

Panel C: CETR by sector						
	W/			W/O		
	N	Mean	Median	N	Mean	Median
Agro & Food Industry	43	0.1622	0.0956	104	0.1855	0.1791
Consumer Products	16	0.1609	0.1309	94	0.2422	0.1981
Industrials	56	0.1276	0.0181	157	0.2293	0.2020
Property & Construction	72	0.2228	0.1591	194	0.2932	0.2161
Resources	37	0.2182	0.1774	66	0.2381	0.2099
Services	69	0.1872	0.1743	207	0.2526	0.2226
Technology	33	0.1761	0.1859	82	0.2470	0.1987
	<u>326</u>	<u>0.1826</u>	<u>0.1353</u>	<u>904</u>	<u>0.2469</u>	<u>0.2099</u>

Panel D: CETR by year						
	W/			W/O		
	N	Mean	Median	N	Mean	Median
2011	87	0.1873	0.1166	220	0.2887	0.2574
2012	85	0.1634	0.1028	216	0.2386	0.2219
2013	72	0.1744	0.1582	240	0.2543	0.2037
2014	82	0.2048	0.1399	228	0.2066	0.1862
	<u>326</u>	<u>0.1826</u>	<u>0.1353</u>	<u>904</u>	<u>0.2469</u>	<u>0.2099</u>

Table 14 The REM measurements of firms with tax loss carryforwards

	Residual > 0		Residual ≤ 0	
	N	%	N	%
R_CFO	178	54.60%	148	45.40%
R_PROD	192	58.90%	134	41.10%
R_EXP	199	61.04%	127	38.96%
R_GAIN	174	54.21%	147	45.79%
RM_1	184	56.44%	142	43.56%
RM_2	178	54.60%	148	45.40%

All variables are defined in the appendix.



Table 15 Descriptive statistics of firms with tax loss carryforwards

Variables ^a	N ^b	Mean	Median	Std. Dev.	P 25	P75	P90
ETR	326	0.1682	0.1237	0.1923	0.0201	0.2136	0.3756
CETR	326	0.1826	0.1353	0.2123	0.0210	0.2441	0.4033
R_CFO	326	0.0106	0.0059	0.1118	-0.0369	0.0590	0.1264
R_PROD	326	-0.0022	0.0217	0.3291	-0.0552	0.0812	0.1448
R_EXP	326	-0.0237	0.0033	0.2057	-0.0373	0.0397	0.0712
R_GAIN	321	0.0039	0.0000	0.0273	-0.0002	0.0004	0.0045
RM_1	326	-0.0258	0.0331	0.5156	-0.0790	0.1195	0.1933
RM_2	326	-0.0131	0.0180	0.2379	-0.0790	0.0864	0.1553
FM	326	0.5307	1.0000	0.4998	0.0000	1.0000	1.0000
INS	326	0.0665	0.0220	0.1144	0.0000	0.0909	0.1834
CG	326	0.6840	1.0000	0.4656	0.0000	1.0000	1.0000
CONS	326	6.7572	2.6304	37.3349	1.7496	4.2402	7.4255
MNF	326	0.2730	0.0000	0.4462	0.0000	1.0000	1.0000
BOI	326	0.4816	0.0000	0.5004	0.0000	1.0000	1.0000
LEV	326	0.1669	0.1032	0.1728	0.0335	0.2691	0.3894
SIZE	326	22.3939	22.1457	1.5868	21.3327	23.3217	24.6823
MB	326	3.1716	1.5350	16.2442	0.9500	2.7300	4.4100
ROA	326	0.0919	0.0688	0.1083	0.0325	0.1188	0.1939
PPE	326	0.3973	0.3892	0.3288	0.1808	0.5465	0.7325
INT	326	0.0360	0.0029	0.1495	0.0000	0.0135	0.0705
EQI	326	0.0056	0.0000	0.0262	0.0000	0.0016	0.0167

^aAll variables are defined in the appendix

^bThe final number of observations is different according to the specific data requirement.

Table 16 The influence of tax loss carryforwards on the association between REM and ETR

$$\begin{aligned} \text{ETR}_{it} = & \alpha_0 + \beta_1 \text{R_GAIN}_{it} + \beta_2 \text{REM}_{it} * \text{NOL}_{it} + \beta_3 \text{FM}_{it} + \beta_4 \text{INS}_{it} + \beta_5 \text{CG}_{it} + \beta_6 \text{CONS}_{it} + \beta_7 \text{MNF}_{it} \\ & + \beta_8 \text{BOI}_{it} + \beta_9 \text{LEV}_{it} + \beta_{10} \text{SIZE}_{it-1} + \beta_{11} \text{MB}_{it-1} + \beta_{12} \text{ROA}_{it} + \beta_{13} \text{NOL}_{it} + \beta_{14} \text{PPE}_{it} + \beta_{15} \text{INT}_{it} \\ & + \beta_{16} \text{EQI}_{it} + \text{IndustryDummies} + \text{YearDummies} + \varepsilon_{it}, \end{aligned}$$

Independent variables ^a	Exp. Sign	ETR ^a					
		(1)	(2)	(3)	(4)	(5)	(6)
Intercept		0.2986***	0.2968***	0.2821***	0.3670***	0.2920***	0.2982***
R_CFO	-	0.0145					
R_CFO*NOL	-	-0.0618					
R_PROD	-		-0.0010				
R_PROD*NOL	-		-0.0315				
R_EXP	-			-0.0383			
R_EXP*NOL	-			-0.0333			
R_GAIN	-				-0.2171		
R_GAIN*NOL	-				-0.4712**		
RM_1	-					-0.0082	
RM_1*NOL	-					-0.0169	
RM_2	-						-0.0132
RM_2*NOL	-						-0.0530*
FM	+	0.0036	0.0041	0.0037	0.0050	0.0040	0.0039
INS	-	-0.0319	-0.0327	-0.0348	-0.0151	-0.0344	-0.0359
CG	+	0.0066	0.0063	0.0062	0.0047	0.0062	0.0057
CONS	+	0.0008***	0.0008***	0.0008***	0.0008**	0.0008***	0.0008***
MNF	-	0.0014	0.0007	-0.0004	0.0012	0.0004	0.0010
BOI	-	-0.0569***	-0.0567***	-0.0557***	-0.0581***	-0.0563***	-0.0558***
LEV	+	0.0110	0.0139	0.0131	0.0221	0.0139	0.0159
SIZE	-	-0.0026	-0.0024	-0.0018	-0.0057	-0.0022	-0.0025
MB	-	-0.0007***	-0.0007***	-0.0007***	-0.0007***	-0.0007***	-0.0007***
ROA	-	-0.1004***	-0.1077***	-0.1019***	-0.0942***	-0.1080***	-0.1086***
NOL	-	-0.0439***	-0.0444***	-0.0451***	-0.0425***	-0.0447***	-0.0450***
PPE	?	0.0040	-0.0021	-0.0040	-0.0031	-0.0035	-0.0053
INT	?	0.0400*	0.0442*	0.0374	0.0358*	0.0442*	0.0433*
EQI	-	-0.8328***	-0.8409***	-0.8343***	-0.8143***	-0.8387***	-0.8521***
Industry fixed effects included		Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects included		Yes	Yes	Yes	Yes	Yes	Yes
N ^b		1230	1230	1230	1217	1230	1230
R-squared		0.1358	0.1363	0.1380	0.1426	0.1369	0.1377
F-stat		9.01***	8.86***	9.29***	9.24***	9.04***	9.10***

*, **, *** indicate significant level at the .10, .05, and .01, respectively.

REM are the real earnings management proxies consisting of four individual measures (R_CFO, R_PROD, R_EXP, and R_GAIN) and two aggregate measures (RM_1 and RM_2).

^aAll variables are defined in the appendix.

^bThe final number of observations in each model is different according to the specific data requirement.

Table 17 The influence of tax loss carryforwards on the association between REM and CETR

$$\begin{aligned} \text{CETR}_{it} = & \alpha_0 + \beta_1 \text{R_GAIN}_{it} + \beta_2 \text{REM}_{it} * \text{NOL}_{it} + \beta_3 \text{FM}_{it} + \beta_4 \text{INS}_{it} + \beta_5 \text{CG}_{it} + \beta_6 \text{CONS}_{it} + \beta_7 \text{MNF}_{it} \\ & + \beta_8 \text{BOI}_{it} + \beta_9 \text{LEV}_{it} + \beta_{10} \text{SIZE}_{it-1} + \beta_{11} \text{MB}_{it-1} + \beta_{12} \text{ROA}_{it} + \beta_{13} \text{NOL}_{it} + \beta_{14} \text{PPE}_{it} + \beta_{15} \text{INT}_{it} \\ & + \beta_{16} \text{EQI}_{it} + \text{IndustryDummies} + \text{YearDummies} + \varepsilon_{it}, \end{aligned}$$

Independent variables ^a	Exp. Sign	CETR ^a					
		(1)	(2)	(3)	(4)	(5)	(6)
Intercept		0.5074***	0.5239***	0.5236***	0.5751***	0.5293***	0.5233***
R_CFO	-	0.0154					
R_CFO*NOL	-	0.0040					
R_PROD	-		0.0524**				
R_PROD*NOL	-		-0.1113***				
R_EXP	-			0.0470			
R_EXP*NOL	-			-0.1702***			
R_GAIN	-				-0.1827		
R_GAIN*NOL	-				-0.4683*		
RM_1	-					0.0335*	
RM_1*NOL	-					-0.0780***	
RM_2	-						0.0299
RM_2*NOL	-						-0.1154**
FM	+	-0.0134	-0.0126	-0.0127	-0.0123	-0.0125	-0.0132
INS	-	-0.0515	-0.0452	-0.0524	-0.0388	-0.0471	-0.0516
CG	+	-0.0049	-0.0055	-0.0056	-0.0077	-0.0056	-0.0058
CONS	+	0.0010**	0.0010**	0.0010**	0.0010**	0.0010**	0.0010**
MNF	-	0.0069	0.0060	0.0055	0.0075	0.0058	0.0062
BOI	-	-0.0695***	-0.0686***	-0.0680***	-0.0708***	-0.0684***	-0.0675***
LEV	+	0.0303	0.0334	0.0332	0.0408	0.0335	0.0291
SIZE	-	-0.0088*	-0.0092**	-0.0091**	-0.0118**	-0.0093**	-0.0092**
MB	-	-0.0012***	-0.0010***	-0.0011***	-0.0012***	-0.0010***	-0.0011***
ROA	-	-0.2162***	-0.2260***	-0.2398***	-0.2110***	-0.2353***	-0.2311***
NOL	-	-0.0734***	-0.0743***	-0.0773***	-0.0718***	-0.0758***	-0.0752***
PPE	?	0.0168	0.0053	0.0026	0.0090	0.0032	0.0072
INT	?	0.0971**	0.0975**	0.1139***	0.0935**	0.1072***	0.1071**
EQI	-	-0.9748***	-1.0158***	-1.0112***	-0.9697***	-1.0197***	-1.0035***
Industry fixed effects included		Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects included		Yes	Yes	Yes	Yes	Yes	Yes
N ^b		1230	1230	1230	1217	1230	1230
R-squared		0.1363	0.1401	0.1403	0.1419	0.1406	0.1390
F-stat		6.99***	6.69***	6.97***	7.46***	6.75***	6.88***

*, **, *** indicate significant level at the .10, .05, and .01, respectively.

REM are the real earnings management proxies consisting of four individual measures (R_CFO, R_PROD, R_EXP, and R_GAIN) and two aggregate measures (RM_1 and RM_2).

^aAll variables are defined in the appendix.

^bThe final number of observations in each model is different according to the specific data requirement.

Table 18 The association between REM and XETR

$$\begin{aligned} \text{XETR}_{it} = & \alpha_0 + \beta_1 \text{REM}_{it} + \beta_2 \text{FM}_{it} + \beta_3 \text{INS}_{it} + \beta_4 \text{CG}_{it} + \beta_5 \text{CONS}_{it} + \beta_6 \text{MNF}_{it} + \beta_7 \text{BOI}_{it} + \beta_8 \text{LEV}_{it} \\ & + \beta_9 \text{SIZE}_{it-1} + \beta_{10} \text{MB}_{it-1} + \beta_{11} \text{ROA}_{it} + \beta_{12} \text{NOL}_{it} + \beta_{13} \text{PPE}_{it} + \beta_{14} \text{INT}_{it} + \beta_{15} \text{EQI}_{it} \\ & + \text{IndustryDummies} + \text{YearDummies} + \varepsilon_{it}, \end{aligned}$$

Independent variables ^a	Exp. Sign	XETR ^a					
		(1)	(2)	(3)	(4)	(5)	(6)
Intercept		0.0318	0.0336	0.0189	0.1053	0.0282	0.0332
R_CFO	-	0.0185					
R_PROD	-		-0.0139				
R_EXP	-			-0.0495**			
R_GAIN	-				-0.3242**		
RM_1	-					-0.0151*	
RM_2	-						-0.0228
FM	+	0.0032	0.0035	0.0032	0.0047	0.0035	0.0035
INS	-	-0.0316	-0.0358	-0.0363	-0.0161	-0.0368	-0.0372
CG	+	0.0002	-0.0006	-0.0008	-0.0014	-0.0008	-0.0010
CONS	+	0.0009**	0.0009**	0.0009**	0.0009**	0.0009**	0.0009**
MNF	-	0.0028	0.0034	0.0022	0.0034	0.0030	0.0038
BOI	-	-0.0552***	-0.0549***	-0.0539***	-0.0555***	-0.0544***	-0.0548***
LEV	+	0.0174	0.0215	0.0209	0.0329*	0.0217	0.0248*
SIZE	-	0.0016	0.0016	0.0021	-0.0018	0.0018	0.0015
MB	-	-0.0007***	-0.0007***	-0.0007***	-0.0007***	-0.0007***	-0.0007***
ROA	-	-0.1026***	-0.1091***	-0.1016**	-0.0961***	-0.1083**	-0.1066***
NOL	-	-0.0378***	-0.0375***	-0.0377***	-0.0373***	-0.0375***	-0.0375***
PPE	?	-0.0003	-0.0046	-0.0074	-0.0094	-0.0065	-0.0064
INT	?	0.0505*	0.0553*	0.0454	0.0456*	0.0536*	0.0509*
EQI	-	-0.8266***	-0.8356***	-0.8326***	-0.8184***	-0.8348***	-0.8449***
Industry fixed effects included		Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects included		Yes	Yes	Yes	Yes	Yes	Yes
N ^b		1230	1230	1230	1217	1230	1230
R-squared		0.0817	0.0819	0.0837	0.0857	0.0826	0.0823
F-stat		4.75***	4.84***	5.18***	4.81***	4.96***	4.94***

*, **, *** indicate significant level at the .10, .05, and .01, respectively.

REM are the real earnings management proxies consisting of four individual measures (R_CFO, R_PROD, R_EXP, and R_GAIN) and two aggregate measures (RM_1 and RM_2).

^aAll variables are defined in the appendix.

^bThe final number of observations in each model is different according to the specific data requirement.

Table 19 The association between REM and XCETR

$$\begin{aligned} \text{XCETR}_{it} = & \alpha_0 + \beta_1 \text{REM}_{it} + \beta_2 \text{FM}_{it} + \beta_3 \text{INS}_{it} + \beta_4 \text{CG}_{it} + \beta_5 \text{CONS}_{it} + \beta_6 \text{MNF}_{it} + \beta_7 \text{BOI}_{it} + \beta_8 \text{LEV}_{it} \\ & + \beta_9 \text{SIZE}_{it-1} + \beta_{10} \text{MB}_{it-1} + \beta_{11} \text{ROA}_{it} + \beta_{12} \text{NOL}_{it} + \beta_{13} \text{PPE}_{it} + \beta_{14} \text{INT}_{it} + \beta_{15} \text{EQI}_{it} \\ & + \text{IndustryDummies} + \text{YearDummies} + \varepsilon_{it}, \end{aligned}$$

Independent variables ^a	Exp. Sign	XCETR ^a					
		(1)	(2)	(3)	(4)	(5)	(6)
Intercept		0.3422***	0.3440***	0.3282***	0.4149***	0.3377***	0.3444***
R_CFO	-	0.0237					
R_PROD	-		-0.0200				
R_EXP	-			-0.0561			
R_GAIN	-				-0.2007		
RM_1	-					-0.0189	
RM_2	-						-0.0247
FM	+	-0.0125	-0.0121	-0.0125	-0.0111	-0.0121	-0.0122
INS	-	-0.0550	-0.0608*	-0.0606*	-0.0412	-0.0617*	-0.0615*
CG	+	-0.0076	-0.0085	-0.0087	-0.0094	-0.0087	-0.0089
CONS	+	0.0010**	0.0010**	0.0010**	0.0010**	0.0010**	0.0010**
MNF	-	0.0102	0.0110	0.0096	0.0113	0.0105	0.0115
BOI	-	-0.0690***	-0.0686***	-0.0675***	-0.0697***	-0.0681***	-0.0686***
LEV	+	0.0512**	0.0565**	0.0556**	0.0638**	0.0565**	0.0598**
SIZE	-	-0.0094**	-0.0094**	-0.0088**	-0.0127***	-0.0091**	-0.0095**
MB	-	-0.0010***	-0.0010***	-0.0010***	-0.0010***	-0.0010***	-0.0010***
ROA	-	-0.2528***	-0.2617***	-0.2520***	-0.2502***	-0.2600***	-0.2576***
NOL	-	-0.0691***	-0.0687***	-0.0689***	-0.0695***	-0.0687***	-0.0688***
PPE	?	0.0213	0.0154	0.0130	0.0135	0.0135	0.0143
INT	?	0.0688**	0.0755**	0.0632	0.0661**	0.0727*	0.0695*
EQI	-	-0.8853***	-0.8969***	-0.8935***	-0.8785***	-0.8958***	-0.9069***
Industry fixed effects included		Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects included		Yes	Yes	Yes	Yes	Yes	Yes
N ^b		1230	1230	1230	1217	1230	1230
R-squared		0.1342	0.1344	0.1357	0.1386	0.1350	0.1345
F-stat		5.87***	5.78***	5.82***	5.91***	5.78***	5.82***

*, **, *** indicate significant level at the .10, .05, and .01, respectively.

REM are the real earnings management proxies consisting of four individual measures (R_CFO, R_PROD, R_EXP, and R_GAIN) and two aggregate measures (RM_1 and RM_2).

^aAll variables are defined in the appendix.

^bThe final number of observations in each model is different according to the specific data requirement.

Table 20 The influence of firms' multinational characteristic on the association between REM and XETR

$$\begin{aligned} \text{XETR}_{it} = & \alpha_0 + \beta_1 \text{REM}_{it} + \beta_2 \text{REM}_{it} * \text{MNF}_{it} + \beta_3 \text{FM}_{it} + \beta_4 \text{INS}_{it} + \beta_5 \text{CG}_{it} + \beta_6 \text{CONS}_{it} + \beta_7 \text{MNF}_{it} \\ & + \beta_8 \text{BOI}_{it} + \beta_9 \text{LEV}_{it} + \beta_{10} \text{SIZE}_{it-1} + \beta_{11} \text{MB}_{it-1} + \beta_{12} \text{ROA}_{it} + \beta_{13} \text{NOL}_{it} + \beta_{14} \text{PPE}_{it} + \beta_{15} \text{INT}_{it} \\ & + \beta_{16} \text{EQI}_{it} + \text{IndustryDummies} + \text{YearDummies} + \varepsilon_{it}, \end{aligned}$$

Independent variables ^a	Exp. Sign	XETR ^a					
		(1)	(2)	(3)	(4)	(5)	(6)
Intercept		0.0334	0.0367	0.0254	0.1078	0.0347	0.0392
R_CFO	-	0.0340					
R_CFO*MNF	-	-0.0435					
R_PROD	-		0.0211				
R_PROD*MNF	-		-0.0773***				
R_EXP	-			-0.0016			
R_EXP*MNF	-			-0.1128***			
R_GAIN	-				-0.3046**		
R_GAIN*MNF	-				-0.1175		
RM_1	-					0.0097	
RM_1*MNF	-					-0.0498***	
RM_2	-						0.0100
RM_2*MNF	-						-0.0764**
FM	+	0.0033	0.0039	0.0035	0.0047	0.0038	0.0038
INS	-	-0.0312	-0.0296	-0.0337	-0.0164	-0.0311	-0.0341
CG	+	0.0000	-0.0009	-0.0012	-0.0014	-0.0011	-0.0014
CONS	+	0.0009***	0.0009***	0.0009***	0.0009***	0.0009***	0.0009***
MNF	-	0.0035	0.0018	-0.0014	0.0037	0.0005	0.0023
BOI	-	-0.0551***	-0.0544***	-0.0533***	-0.0556***	-0.0540***	-0.0541***
LEV	+	0.0219	0.0248*	0.0222	0.0361*	0.0242*	0.0324**
SIZE	-	0.0014	0.0016	0.0021	-0.0019	0.0017	0.0014
MB	-	-0.0007***	-0.0007***	-0.0007***	-0.0007***	-0.0007***	-0.0007***
ROA	-	-0.0975***	-0.1158***	-0.1191***	-0.0948***	-0.1200***	-0.1086***
NOL	-	-0.0379***	-0.0385***	-0.0387***	-0.0373***	-0.0386***	-0.0383***
PPE	?	-0.0014	-0.0123	-0.0139	-0.0101	-0.0135	-0.0122
INT	?	0.0471*	0.0554*	0.0588**	0.0447*	0.0595**	0.0536**
EQI	-	-0.8345***	-0.8698***	-0.8599***	-0.8259***	-0.8690***	-0.8747***
Industry fixed effects included		Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects included		Yes	Yes	Yes	Yes	Yes	Yes
N ^b		1230	1230	1230	1217	1230	1230
R-squared		0.0820	0.0850	0.0863	0.0858	0.0855	0.0845
F-stat		4.54***	4.59***	4.95***	4.61***	4.70***	4.67***

*, **, *** indicate significant level at the .10, .05, and .01, respectively.

REM are the real earnings management proxies consisting of four individual measures (R_CFO, R_PROD, R_EXP, and R_GAIN) and two aggregate measures (RM_1 and RM_2).

^aAll variables are defined in the appendix.

^bThe final number of observations in each model is different according to the specific data requirement.

Table 21 The influence of firms' multinational characteristic on the association between REM and XCETR

$$\begin{aligned} \text{XCETR}_{it} = & \alpha_0 + \beta_1 \text{REM}_{it} + \beta_2 \text{REM}_{it} * \text{MNF}_{it} + \beta_3 \text{FM}_{it} + \beta_4 \text{INS}_{it} + \beta_5 \text{CG}_{it} + \beta_6 \text{CONS}_{it} + \beta_7 \text{MNF}_{it} \\ & + \beta_8 \text{BOI}_{it} + \beta_9 \text{LEV}_{it} + \beta_{10} \text{SIZE}_{it-1} + \beta_{11} \text{MB}_{it-1} + \beta_{12} \text{ROA}_{it} + \beta_{13} \text{NOL}_{it} + \beta_{14} \text{PPE}_{it} + \beta_{15} \text{INT}_{it} \\ & + \beta_{16} \text{EQI}_{it} + \text{IndustryDummies} + \text{YearDummies} + \varepsilon_{it} \end{aligned}$$

Independent variables ^a	Exp. Sign	XCETR ^a					
		(1)	(2)	(3)	(4)	(5)	(6)
Intercept		0.3427***	0.3510***	0.3450***	0.4085***	0.3535***	0.3574***
R_CFO	-	0.0286					
R_CFO*MNF	-	-0.0135					
R_PROD	-		0.0564**				
R_PROD*MNF	-		-0.1687***				
R_EXP	-			0.0695			
R_EXP*MNF	-			-0.2956***			
R_GAIN	-				-0.2510		
R_GAIN*MNF	-				0.3016		
RM_1	-					0.0413**	
RM_1*MNF	-					-0.1210***	
RM_2	-						0.0461*
RM_2*MNF	-						-0.1648***
FM	+	-0.0125	-0.0114	-0.0116	-0.0111	-0.0113	-0.0116
INS	-	-0.0549	-0.0473	-0.0540	-0.0403	-0.0479	-0.0549
CG	+	-0.0076	-0.0094	-0.0098	-0.0094	-0.0096	-0.0098
CONS	+	0.0010**	0.0010**	0.0010**	0.0010**	0.0010**	0.0010**
MNF	-	0.0104	0.0074	0.0002	0.0105	0.0043	0.0082
BOI	-	-0.0690***	-0.0674***	-0.0660***	-0.0696***	-0.0670***	-0.0672***
LEV	+	0.0526**	0.0636***	0.0590***	0.0555*	0.0627***	0.0763***
SIZE	-	-0.0095**	-0.0093**	-0.0089**	-0.0124***	-0.0093**	-0.0099**
MB	-	-0.0010***	-0.0010***	-0.0010***	-0.0010***	-0.0010***	-0.0010***
ROA	-	-0.2512***	-0.2763***	-0.2979***	-0.2536***	-0.2884***	-0.2620***
NOL	-	-0.0691***	-0.0708***	-0.0715***	-0.0694***	-0.0713***	-0.0704***
PPE	?	0.0209	-0.0015	-0.0040	0.0152	-0.0035	0.0020
INT	?	0.0677*	0.0757**	0.0985***	0.0684*	0.0872***	0.0753***
EQI	-	-0.8877***	-0.9717***	-0.9649***	-0.8593***	-0.9791***	-0.9712***
Industry fixed effects included		Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects included		Yes	Yes	Yes	Yes	Yes	Yes
N ^b		1230	1230	1230	1217	1230	1230
R-squared		0.1342	0.1435	0.1466	0.1388	0.1456	0.1408
F-stat		5.64***	5.96***	7.76***	5.69***	6.77***	5.92***

*, **, *** indicate significant level at the .10, .05, and .01, respectively.

REM are the real earnings management proxies consisting of four individual measures (R_CFO, R_PROD, R_EXP, and R_GAIN) and two aggregate measures (RM_1 and RM_2).

^aAll variables are defined in the appendix.

^bThe final number of observations in each model is different according to the specific data requirement.

Table 22 The influence of tax loss carryforwards on the association between REM and XETR

$$\begin{aligned} XETR_{it} = & \alpha_0 + \beta_1 R_EXP_{it} + \beta_2 REM_{it} * NOL_{it} + \beta_3 FM_{it} + \beta_4 INS_{it} + \beta_5 CG_{it} + \beta_6 CONS_{it} + \beta_7 MNF_{it} \\ & + \beta_8 BOI_{it} + \beta_9 LEV_{it} + \beta_{10} SIZE_{it-1} + \beta_{11} MB_{it-1} + \beta_{12} ROA_{it} + \beta_{13} NOL_{it} + \beta_{14} PPE_{it} + \beta_{15} INT_{it} \\ & + \beta_{16} EQI_{it} + IndustryDummies + YearDummies + \varepsilon_{it}, \end{aligned}$$

Independent variables ^a	Exp. Sign	XETR ^a					
		(1)	(2)	(3)	(4)	(5)	(6)
Intercept		0.0358	0.0397	0.0266	0.1043	0.0367	0.0421
R_CFO	-	0.0339					
R_CFO*NOL	-	-0.0773					
R_PROD	-		0.0116				
R_PROD*NOL	-		-0.0542**				
R_EXP	-			-0.0234			
R_EXP*NOL	-			-0.0590*			
R_GAIN	-				-0.1678		
R_GAIN*NOL	-				-0.4639*		
RM_1	-					0.0006	
RM_1*NOL	-					-0.0316**	
RM_2	-						0.0043
RM_2*NOL	-						-0.0773**
FM	+	0.0031	0.0039	0.0034	0.0046	0.0038	0.0035
INS	-	-0.0313	-0.0319	-0.0354	-0.0163	-0.0339	-0.0349
CG	+	-0.0001	-0.0007	-0.0008	-0.0021	-0.0008	-0.0011
CONS	+	0.0009***	0.0009***	0.0009***	0.0009***	0.0009***	0.0009***
MNF	-	0.0031	0.0026	0.0018	0.0031	0.0024	0.0028
BOI	-	-0.0546***	-0.0545***	-0.0536***	-0.0558***	-0.0541***	-0.0536***
LEV	+	0.0156	0.0217	0.0209	0.0282	0.0217	0.0209
SIZE	-	0.0014	0.0014	0.0019	-0.0017	0.0016	0.0013
MB	-	-0.0007***	-0.0006***	-0.0007***	-0.0007***	-0.0006***	-0.0006***
ROA	-	-0.1021***	-0.1128***	-0.1098***	-0.0988***	-0.1148***	-0.1146***
NOL	-	-0.0372***	-0.0380***	-0.0391***	-0.0361***	-0.0386***	-0.0389***
PPE	?	-0.0002	-0.0095	-0.0107	-0.0080	-0.0108	-0.0105
INT	?	0.0498*	0.0549*	0.0521*	0.0474*	0.0569**	0.0570**
EQI	-	-0.8298***	-0.8517***	-0.8431***	-0.8177***	-0.8498***	-0.8558***
Industry fixed effects included		Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects included		Yes	Yes	Yes	Yes	Yes	Yes
N ^b		1230	1230	1230	1217	1230	1230
R-squared		0.0824	0.0834	0.0845	0.0868	0.0838	0.0843
F-stat		4.81***	4.56***	4.91***	4.84***	4.69***	4.88***

*, **, *** indicate significant level at the .10, .05, and .01, respectively.

REM are the real earnings management proxies consisting of four individual measures (R_CFO, R_PROD, R_EXP, and R_GAIN) and two aggregate measures (RM_1 and RM_2).

^aAll variables are defined in the appendix.

^bThe final number of observations in each model is different according to the specific data requirement.

Table 23 The influence of tax loss carryforwards on the association between REM and XCETR

$$\begin{aligned} \text{XCETR}_{it} = & \alpha_0 + \beta_1 \text{R_GAIN}_{it} + \beta_2 \text{REM}_{it} * \text{NOL}_{it} + \beta_3 \text{FM}_{it} + \beta_4 \text{INS}_{it} + \beta_5 \text{CG}_{it} + \beta_6 \text{CONS}_{it} + \beta_7 \text{MNF}_{it} \\ & + \beta_8 \text{BOI}_{it} + \beta_9 \text{LEV}_{it} + \beta_{10} \text{SIZE}_{it-1} + \beta_{11} \text{MB}_{it-1} + \beta_{12} \text{ROA}_{it} + \beta_{13} \text{NOL}_{it} + \beta_{14} \text{PPE}_{it} + \beta_{15} \text{INT}_{it} \\ & + \beta_{16} \text{EQI}_{it} + \text{IndustryDummies} + \text{YearDummies} + \varepsilon_{it} \end{aligned}$$

Independent variables ^a	Exp. Sign	XCETR ^a					
		(1)	(2)	(3)	(4)	(5)	(6)
Intercept		0.3435***	0.3586***	0.3508***	0.4138***	0.3602***	0.3602***
R_CFO	-	0.0289					
R_CFO*NOL	-	-0.0261					
R_PROD	-		0.0403*				
R_PROD*NOL	-		-0.1283***				
R_EXP	-			0.0208			
R_EXP*NOL	-			-0.1739***			
R_GAIN	-				-0.0418		
R_GAIN*NOL	-				-0.4714*		
RM_1	-					0.0229	
RM_1*NOL	-					-0.0841***	
RM_2	-						0.0230
RM_2*NOL	-						-0.1358**
FM	+	-0.0126	-0.0113	-0.0119	-0.0112	-0.0113	-0.0122
INS	-	-0.0549	-0.0515	-0.0582*	-0.0414	-0.0538	-0.0575*
CG	+	-0.0076	-0.0088	-0.0087	-0.0100	-0.0088	-0.0090
CONS	+	0.0010**	0.0010**	0.0010**	0.0010**	0.0010**	0.0010**
MNF	-	0.0103	0.0091	0.0083	0.0109	0.0088	0.0097
BOI	-	-0.0688***	-0.0675***	-0.0668***	-0.0701***	-0.0672***	-0.0664***
LEV	+	0.0506**	0.0569**	0.0556**	0.0590**	0.0566**	0.0529**
SIZE	-	-0.0095**	-0.0097**	-0.0094**	-0.0126***	-0.0097**	-0.0099**
MB	-	-0.0010***	-0.0009***	-0.0010***	-0.0010***	-0.0009***	-0.0009***
ROA	-	-0.2527***	-0.2706***	-0.2761***	-0.2529***	-0.2772***	-0.2718***
NOL	-	-0.0689***	-0.0698***	-0.0731***	-0.0682***	-0.0715***	-0.0711***
PPE	?	0.0213	0.0038	0.0032	0.0150	0.0021	0.0072
INT	?	0.0685**	0.0744**	0.0829***	0.0679**	0.0816**	0.0803**
EQI	-	-0.8864***	-0.9350***	-0.9242***	-0.8777***	-0.9359***	-0.9261***
Industry fixed effects included		Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects included		Yes	Yes	Yes	Yes	Yes	Yes
N ^b		1230	1230	1230	1217	1230	1230
R-squared		0.1342	0.1397	0.1396	0.1393	0.1402	0.1384
F-stat		5.64***	5.47***	5.49***	5.82***	5.48***	5.58***

*, **, *** indicate significant level at the .10, .05, and .01, respectively.

REM are the real earnings management proxies consisting of four individual measures (R_CFO, R_PROD, R_EXP, and R_GAIN) and two aggregate measures (RM_1 and RM_2).

^aAll variables are defined in the appendix.

^bThe final number of observations in each model is different according to the specific data requirement.

Table 24 The analysis results in a nutshell

Model	Main test						Robustness test					
	1		2		3		1		2		3	
	ETR	CETR	ETR	CETR	ETR	CETR	XETR	XCETR	XETR	XCETR	XETR	XCETR
R_CFO	x	x	x	x	x	x	x	x	x	x	x	x
R_PROD	x	x	√	√	x	√	x	x	√	√	√	√
R_EXP	√	x	√	√	x	√	√	x	√	√	√	√
R_GAIN	√	√	x	x	√	√	√	x	x	x	√	√
RM_1	√	x	√	√	x	√	√	x	√	√	√	√
RM_2	√	x	√	√	√	√	x	x	√	√	√	√

1 = the association between corporate income tax planning and REM.

2 = the influence of firms' multinational characteristic on the association between corporate income tax planning and REM.

3 = the influence of tax loss carryforwards on the association between corporate income tax planning and REM.

√ and x respectively represent the presence and absence of association.



VITA

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