# Book-Tax Differences: a Function of Accounting-Tax Misalignment, Earnings Management and Tax Management

**BY**

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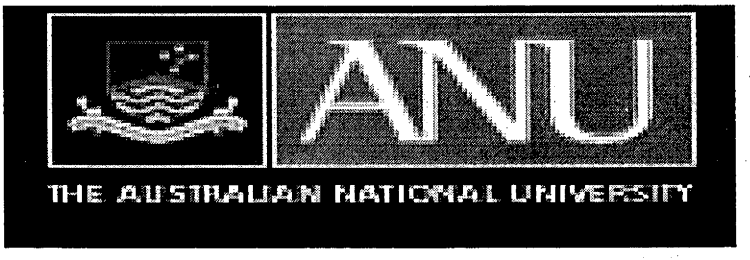


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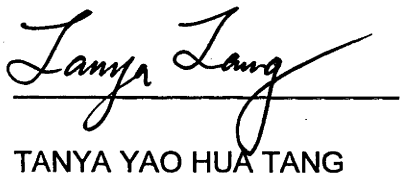
# DECLARATION

Except where stated otherwise, this thesis is an original research conducted by the author during the period from March 2003 to June 2006 at the Australian National University.



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# ABSTRACT

This thesis investigates the informativeness of book-tax differences (BTD). It examines the usefulness of BTD in evaluating the extent of accounting-tax nonconformity and proxying firms' earnings management and tax management, and investigates the value relevance of BTD in a Chinese context.

Motivated by the potential but largely overlooked usefulness of BTD in indicating unobservable earnings management and tax management and earnings quality, three research questions are addressed: (1) Can observable BTD proxy earnings management and tax management after controlling for accounting-tax misalignment? (2) To what extent is variation in BTD associated with earnings management and tax management incentives? (3) Is the information embedded in BTD sufficient to make BTD value relevant?

A conceptual framework is developed, identifying BTD as a function of accounting-tax misalignment, earnings management and tax management. Therefore, BTD is argued to be a measure of EM and TM after controlling for the effect of accounting-tax misalignment and so signifies the earnings quality. It is expected to be value relevant because it provides the policy-related information about different requirements in book and tax reporting and the earnings-quality-related information regarding managerial manipulations to the capital markets. Both of information may aid investors to precisely evaluate and forecast firms' future performance and so may affect share returns.

An important methodological and conceptual contribution is the division of BTD into normal BTD (NBTD) and abnormal BTD (ABTD). NBTD is attributed to the

mechanical differences arising from divergent income reporting rules for book and tax purposes, signalling the extent of accounting-tax misalignment. ABTD is attributed to managerial choices in accounting and tax reporting, thus proxying the level of management manipulations. These latent components of BTD are estimated by regressing BTD on factors associated with *normal* BTD. When the resultant model is used to forecast *normal* BTD, the unpredicted BTD is *abnormal* (ABTD).

Accounting data from Chinese B-shares listed companies' financial statements are used to test this framework. This is particularly advantageous because the disclosure requirements for these companies reveal particular aspects of BTD not readily observable in other settings.

The variables of incentives for EM and TM explain a large portion of the estimated ABTD. The magnitude of ABTD appears to indicate the existence and level of management manipulations, suggesting that it is a useful metric for EM and TM. A naïve proxy for ABTD is also used to evaluate the robustness of the conceptual design, with similar but slightly weaker results.

The evidence also supports the prediction that the BTD and its components are value-relevant, consistent with that the information embedded in BTD informs the market on different institutional arrangements in accounting and tax rules and the levels of noise in reported financial information (i.e. earnings quality). BTD is incrementally informative for future earnings and stock returns beyond current-year earnings.

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# Glossary of Acronyms

| | |
|---|---|
| ABTD | Abnormal Book-Tax Differences |
| ASBE | Accounting Standards for Business Enterprises |
| BTD | Book-Tax Differences |
| CAS | Chinese Accounting Standards |
| COE | Collectively Owned Enterprises |
| CSRC | Chinese Securities Regulatory Commission |
| EM | Earnings Management |
| EMH | Efficient Market Hypothesis |
| ETR | Effective Tax Rate |
| FDI | Foreign Direct Investment |
| FEITL | Income Tax Law for Enterprises with Foreign Investment and Foreign Enterprises |
| FIE | Foreign Investment Enterprises |
| GAAP | Generally Accepted Accounting Principles |
| GDP | Gross Domestic Products |
| GFPE | General Financial Principles for Enterprises |
| IASC | International Accounting Standards Committee |
| IPO | Initial Public Offerings |
| IOE | Individually Owned Enterprises |
| JSLE | Accounting System for Joint Stock limited Enterprises |
| MOF | Minister of Finance |
| NBTD | Normal Book-Tax Differences |
| NPC | National People's Congress |
| NOL | Net Operating Losses |
| OLS | Ordinary Least Squares |
| PD | Permanent Differences |
| PT | Particular Transfer |
| REIT | Tentative Regulations for Enterprises Income Tax of PRC |
| ROE | Return of Equity |
| SAT | State Administration of Taxation |
| SEO | Seasoned Equity Offerings |
| SOE | State-Owned-Enterprises |
| ST | Special Treatment |

| | |
|---|---|
| TD | Temporary (Timing) Differences |
| TM | Tax Management |
| WTO | World Trade Organisation |

# CHAPTER ONE

# INTRODUCTION

## 1.1 Objectives of the Thesis

This thesis explores the informativeness of book-tax differences (BTD). It examines the potential for BTD in evaluating the extent of accounting-tax misalignment and proxying firms' earnings management (EM) and tax management (TM), and investigates the value relevance of BTD in a Chinese context.

This thesis attempts to enrich and deepen the understanding of BTD in terms of epistemology and methodology. Three broad research questions addressed in this thesis are:

(1) Can observable BTD proxy earnings management and tax management after controlling for accounting-tax misalignment?

(2) To what extent is variation in BTD associated with earnings management and tax management incentives?

(3) Is the information embedded in BTD sufficient to make BTD value relevant?

To answer these questions, this study firstly constructs a theoretical framework, in which BTD is interpreted as a function of accounting-tax misalignment, earnings management and tax management. Therefore, it is argued that BTD may be used to proxy EM and TM after controlling for accounting-tax misalignment. BTD is expected to be informative for share prices because it can provide the policy-related information about the divergent accounting and tax reporting requirements and the quality-related information about management manipulations. This two different information

impounded in BTD may aid investors to precisely evaluate and forecast firms' future performance and so may affect stock returns.

Next, this thesis develops a methodology to decompose BTD into normal and abnormal components. Normal BTD (NBTD) is defined as the mechanical differences due to the divergent reporting rules for book and tax purposes, addressing the extent of accounting-tax misalignment. Abnormal BTD (ABTD) refers to the potentially opportunistic differences due to the managerial choices in accounting and tax reporting, thus quantifying the level of management manipulations. Because both NBTD and ABTD are not observed directly, indicator measures are developed by regressing BTD on factors associated with *normal* BTD. When the resultant model is used to forecast *normal* BTD, the unpredicted BTD is *abnormal* (ABTD).

Accounting data from Chinese B-shares listed companies' financial statements are used to test the relevant research questions. This is particularly advantageous because the disclosure requirements for these companies reveal particular aspects of BTD not readily observable in other settings. The empirical study provides evidence that the estimated ABTD is positively related to most EM and TM incentives, suggesting it is a useful metric for EM and TM. BTD and its components are value relevant in the Chinese capital markets.

## 1.2 Important Concepts and Definitions in the Thesis

This section explains four important concepts that underlie the research questions in this study.

***Book-Tax Differences***

In the definition used most commonly in the literature, book-tax differences refer to the gap between pre-tax income reported in a company's published financial statement (thereafter book income) and taxable income reported to tax authorities. BTD originates from different reporting rules for financial reporting (including accounting principles, standards, regulations) compared to income tax laws (including income tax legislations, judicial precedents, administrative ruling) (e.g. Smith and Butters 1949, Beresford *et al.* 1983, Tran 1997).[1]

The objective of financial reporting as set in accounting rules is to provide information about the financial position, performance and changes in financial position of an enterprise that is useful to accounting information users in making economic decisions. However, the objectives of tax laws typically are to raise revenue for governmental operations and to control the economy to achieve social, economic and political goals. These conflicting objectives guiding different development of rules for financial reporting and tax reporting raise the issue of BTD.

In this study, BTD not only reflects the mechanical differences due to the divergent reporting rules for book and tax purposes, but also reflects the opportunistic differences due to the managerial choices in accounting and tax reporting.

***Earnings Management***

Based on existent literature, there are various definitions of earnings management. Watts and Zimmerman (1990) define earnings management as occurring when managers exercise their discretion over the accounting numbers with or without

[1] In China, income tax laws include income tax legislations, administrative regulations, bylaws and departmental ruling.

restrictions. This study follows the definition of earnings management suggested by Healy and Wahlen (1999) in which earnings management refers to "managers use judgement in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company, or to influence outcomes that depend on reported accounting numbers" (p368).

***Tax Management***

Like earnings management, tax management, or tax planning or tax avoidance or tax shelter has various definitions. [2] Generally, it is defined as taxpayers taking advantage of the provision of the tax laws to legally reduce or defer their tax liability (e.g. Scholes *et al.* 2002, Tresch 2002). In this study, tax management refers to taxpayers exploiting the uncertainty of tax laws to choose the advantageous provision in tax reporting and in structuring tax-favoured activities to legally influence their tax liabilities.

***Value Relevance***

In the value relevance literature, a potential information item is defined as value relevant if it exhibits the significant association with a measure of equity market value or stock prices (Barth *et al.* 2001, Barth 2000, Ohlson 1995, Beaver 1998). Some studies also regard an item as value relevant if it affects stock prices, stock prices variability, or trading volumes (Beaver 1968, Bauman 1996). In this study, an accounting variable is regarded as value relevant if it is informative for evaluating firms' performance and estimating future earnings and this information can be reflected in

[2] They are interchangeably used in the tax planning literature.

stock prices as suggested in Ou (1990), Lev and Thiagarajan (1993) and Abarbanell and Bushee (1997).

## 1.3 Why Research BTD?

To date, the intricate business activities and managerial practice have complicated the informativeness of BTD. While aggressive book and tax reporting appear to be pervasive, BTD has become more and more meaningful due to its potential for interpreting this unobserved managerial practice. However, as will be illustrated in Chapters 2 and 3, prior research on BTD is relatively limited. This leads to the informativeness of BTD has not been adequately demonstrated and utilised.

### 1.3.1 The Potential Informativeness and Usefulness of BTD

Based on the definition, BTD is the gap between book income and taxable income underlying different accounting and tax rules. However, these two sets of rules can not specify accounting and/or tax treatment for each detail of business transaction because business activities are complex and changing. This necessarily leaves considerable uncertainty in applying accounting standards and tax laws. If managers manage their earnings reported to investors and tax authorities by opportunistically implementing the accounting and tax rules, can BTD reflect additional information other than the accounting-tax misalignment per se?

As will be indicated in Chapter 2, accounting information is subject to manipulation. Nowadays, the growth in use of tax shelters has led to the financial statement-based measures of income being less representative of firms' taxable income (Dhaliwal et. al 2004, Manzon and Plesko 2002). "It is almost impossible to know a firm's tax bill by looking at its financial statements and thus it is impossible to

figure out what actual profits are" (The Wall Street Journal, 2003). The massive earnings management and accounting scandals (e.g. Enron, WorldCom) have threatened the value of accounting information and its role in providing useful information for share pricing and economic decisions. As a result, how to detect earnings management and tax management or assess the reliability of accounting information is an empirical issue.

If BTD is also reflective of these opportunistic behaviours, how this information can be discriminated from that about institutional arrangements? What is the implication of the mechanical differences for evaluating the extent of accounting-tax misalignment in a specific country? Can the opportunistic differences be used to measure the unobserved EM and TM? If yes, tax authorities and audit firms may focus on firms with larger opportunistic differences to perform an efficient and effective auditing. Researchers may use a new proxy to estimate or detect the forms and incidence of the unobservable EM and TM. Investors and financial analysts may assess the reliability of accounting reports. Further, if BTD can inform the market of extra information about unobservable managerial manipulation, is it possibly a good supplement of accounting measures and incrementally informative for stock prices? This thesis is motivated by these concerns and potential implications of BTD for explaining and predicting some accounting phenomena.

### 1.3.2 Research Gaps in Prior Literature

The study is also motivated by the deficiency in extant BTD literature, the challenges in detecting EM and TM and remained concerns about earnings quality in the value relevance research.

***Incomplete Research on BTD***

Two research lines make up the existing BTD literature: the first line studies BTD from the perspective of institutional arrangements, emphasising that BTD is a product of the discrepancy between accounting rules and tax laws. This line either implicitly studies BTD by analysing the relationship between accounting and taxation, which explains the mechanical sources of BTD or studies the relationship between accounting and taxation in a selected country by using BTD to explain the divergent rules (e.g. Porcano and Tran 1998, Tran 1998).

The second line concentrates on managerial incentives and opportunistic choices, arguing that BTD is influenced by managerial practice in increasing/smoothing accounting earnings or reducing/deferring tax payment to serve management interests (e.g. Mills 1998, Mills and Newberry 2001, Phillips *et al.* 2003, Plesko 2004, McGill and Outslay 2004, Desai and Dharmapala 2004). This line posits that distinct incentives of financial statement preparers likely lead to different amounts of income reported to investors and tax authorities that may generate the opportunistic variation in BTD. These studies extend the implications of BTD for interpreting management manipulations, though no much empirical evidence supports the proposition that BTD may be a proxy for tax planning.

However, these two lines of research are conducted in a split focus. Most of studies either ignore mechanical differences or ignore opportunistic differences. This drawback makes their inferential results difficult to interpret. Even when the researchers have realised that, the difficulty in discriminating the institutional factors from opportunistic factors appears to have hindered their further empirical testing and the advances in BTD research (A detailed analysis is presented in Chapter 2).

***Research Challenges in the EM and TM Literature***

A major challenge in recent EM and TM research is the unobservability of managerial actions or the lack of an appropriate measurement for EM and TM (Beneish 2001, Hofmann 2002). Although, in the earnings management literature, the measurements of total accruals and discretionary accruals have been widely used as proxies for EM (e.g. Healy 1985, DeAngelo 1986, Jones 1991, Dechow *et al.* 1995, Dechow and Sloan 1991, Guenther 1994a), they have been subject to significant criticism due to measurement imprecision and misspecification (e.g. Beneish 1999, Phillips *et al.* 2003, Guay *et al.* 1996, Bernard and Skinner 1996, McNichols 2000).

Dechow *et al.* (1995) evaluate the power and specification of five discretionary accruals models, such as Healy, DeAngelo, Jones, Modified Jones model and the Industry Model, they conclude that "the models all generate tests of low power for earnings management of economically plausible magnitude" (p193). More importantly, accruals measurement per se can not detect some EM if earnings are managed by real transactions which create both cash flows and earnings (Roychowdhury 2004, Jian and Wong 2003).

As with detecting earnings management, measuring tax planning is not easy, due mainly to the confidentiality of tax data and lack of an appropriate proxy for TM. In current tax research, effective tax rate (ETR) is commonly used to measure TM (e.g. Mills *et al.* 1998, Petroni and Shackelford 1999, Gupta and Mills 2002, Rego 2003, Phillips 2003).[3] Shevlin (1999) and Shackelford and Shevlin (2001) suggest that ETR, measured as current tax expense as a percent of pre-tax book income, provides an

[3] ETR, being a ratio of taxes to pre-tax book income, can be measured in different ways. For example, the numerator can be income tax expense, current tax expense, current tax expense plus foreign tax expense, total tax expense minus the change in deferred tax liabilities, total tax expense minus the deferred tax expense or deferred tax expense. Similarly, the denominator may take many forms, such as taxable income, pre-tax income, operating cash flow, gross margin or working capital from operation (See Wilkie and Limberg 1993, Callihan 1994).

appropriate measure for tax planning effectiveness (and also tax aggressiveness) because effective tax planning results in a low ETR.

However, some argue that ETR's ability may be weakened due to measurement error and its exclusion of implicit tax (Wilkie 1992, Wilkie and Limberg 1993, Scholes *et al.* 2002, Plesko 2003). For example, Wilkie (1992) argues that ETR is noisy when a net operating loss (NOL) is carried forward in a profitable year because in that circumstance, ETR is understated even no tax planning.

In addition, ETR itself contains the information of both tax planning and incentive effects of tax policy. It is hard to ascertain whether the lower level of ETR is caused by tax preference/holidays or tax sheltering. Thus, ETR proxy will introduce measurement error into the results of TM examination (See a detailed discussion in Chapter 2).

***Remaining Concerns in the Value Relevance Literature***

In capital markets research, value relevance studies which assess the extent to which selected accounting variables affect stock market values are a major group. Some financial variables such as earnings, taxable income, inventory, ETR have been documented to be value relevant since they can provide useful information for investors and market analysts to evaluate firms' performance and estimate future earnings (Ball and Brown 1968, Beaver 1968, Lev and Thiagarajan 1993, Abarbanell and Bushee 1997, Shevlin 2002, Lev and Nissim 2004, Hanlon 2004). The fixation, however, on reported financial statement numbers of investors and market induces management to manipulate the value-relevant financial variables (e.g. book and taxable income) for their self-interests (Kothari 2001).

Two major concerns relating to the value relevance of accounting information arise: (1) the lower explanatory and predictive power of earnings on stock prices presented in prior literature (Lev 1989); and (2) a deterioration in the association between accounting information and stock prices over the past four decades (Collins *et al.* 1997, Francis and Schipper 1999). An argument made by Lev (1989) stresses that, if accounting numbers used in regressions are not accurate in depicting the performance of the company, the regression results will not explain the extent to which earnings predict stock returns. It is an essential point because much of research has been done on refining statistical models but appears to fail in testing the quality of input data. If value relevance research is conducted on a basis of manipulated data, its implications for practice should be doubted. Thus, how the market can assess the reliability of financial variables is an empirical issue.

Taken together, the challenges in detecting EM and TM leave the quality of accounting information open for further investigation. The inadequate studies in the informativeness of BTD weaken BTD's utility on this issue. This study aims to conduct a complete study to extend the knowledge of BTD. It also attempts to advance extant BTD research by developing a new method to classify different information in BTD and further investigate their usefulness. This thesis fills some of gaps in the EM, TM and value relevance literature by testing the capability of BTD to proxy EM and TM, and earnings quality in the capital markets.

## 1.4 Why Research BTD in the Chinese Context?

Similar to the Western developed countries, such as the United States of America (U.S.), Canada and Australia, China has BTD. BTD has emerged and developed as China's accounting and tax systems evolved from a closely aligned system to unaligned systems. In the last 25 years, to adapt to the transition from a socialist

planned economy to a market-oriented economy and business internationalisation, China established its accounting standards to comply with International Accounting Standards (IAS), and imported international tax practice to its tax system. This importation not only brought some mechanical gaps in the reporting rules, but also brought opportunistic differences due to managerial choices in book and tax reporting. Although China has a rather short history of BTD, managerial and market practice has led it to develop in a similar way to countries with a long history of BTD, such as the U.S. and Australia.

Being the largest emerging capital market in the world, however, the reliability of accounting information has been questioned (Haw *et al.* 1998a, Abdel-khalik *et al.* 1999, Eccher and Healy 2000, Shen 2001, Chen *et al.* 2003). Empirical evidence shows that management manipulation over earnings in the Chinese listed firms is rampant (e.g. Chen 1998, Jian and Wong 2003, Haw *et al.* 1998b, Chen *et al.* 2000). Anecdotal evidence suggests that tax planning is prevalent and easily undertaken in China.

Similarly, the increasing occurrence of accounting scandals (e.g. YingGuangXia, Sanjiu Medical & Pharmaceutical and QiongMingYuan) has weakened the investors' confidence in their use of accounting information.[4] The question of how the investors can evaluate the firms' managed and unmanaged performance remains open and is of key interest to market participants and regulators.

These institutional and opportunistic contexts provide opportunities to develop a complete and in-depth BTD theory. More importantly, the disclosure requirements for China's B-shares listed companies reveal particular aspects of BTD not readily

[4] The accounting scandals in the Chinese capital market include Sanjiu Medical & Pharmaceutical, YingGuangXia and QiongMingYuan scandals and so forth. In YingGuangXia scandal, the firm manipulated 0.7 billion RMB net income from 1999 to 2000. QiongMingYuan manipulated 0.54 billion profit in 1996.

observable in other settings, avoiding some of the measurement error in the estimated BTD as shown in the U.S. literature. This is particularly advantageous for the empirical research of BTD as elaborated in Chapter 5.

## 1.5 Contributions of the Thesis

The research conducted in this thesis is expected to add to the knowledge about the informativeness and usefulness of BTD. It contributes to five lines of research.

(1) This study develops a theoretical framework for BTD research, identifying BTD as a function of accounting-tax misalignment, EM and TM. BTD is expected to be value relevant because it informs the market of both policy-related information about the differences between GAAP and tax laws and quality-related information about managerial manipulations.

(2) It makes an important methodological and conceptual contribution by decomposing BTD into normal and abnormal components. NBTD provides researchers with a measure to evaluate the magnitude of accounting-tax misalignment among countries and its variation across the time in a particular country, and ABTD proxies the extent of management manipulations and the levels of distortion in reported financial information. This identification offers some insights into standard setting and the role of accounting.

(3) It extends prior studies concerning BTD and EM conducted in the U.S. by controlling for the mechanical causes of BTD and incorporating the consideration of tax management. It refines the research design in prior U.S. literature by examining a whole reported BTD (i.e. including timing differences and permanent differences) instead of one of components of BTD (i.e. using deferred tax expenses as a proxy for BTD).

(4) This study involves an initial effort to empirically examine the ability of BTD to proxy tax management by utilising China's observable tax planning incentives. It

provides empirical support for the proposition that BTD signals the existence of tax management. Specifically, the adoption of tax-effect BTD provides an insight into studying tax-induced income shifting.

(5) It extends prior fundamental analysis literature by investigating the value relevance of BTD from the perspectives of both institutional arrangements and earnings quality. The findings also add to the understanding of the Chinese capital markets and managerial practice.

## 1.6 Structure of the Thesis

This thesis is organised into ten chapters. Chapter 2 reviews the literature relevant to BTD, earnings management, and tax management research and their relations. Chapter 3 presents a detailed review of the value relevance research with a focus of BTD issue. Chapter 4 develops a theoretical framework which indicates the potential informativeness and usefulness of BTD. Chapter 5 describes the development of the Chinese accounting and tax systems, and its emerging capital markets. By comparing the features of the U.S. and China's BTD, it evaluates the possibility of research hypotheses specific to the Chinese context. Chapter 6 examines the managerial incentives and features of earnings management and tax planning for the Chinese listed firms, and develops EM and TM hypotheses from a Chinese context. The hypothesis of the value relevance of BTD is also developed. Chapter 7 describes the research design and data collection. A cross-sectional BTD regression model is proposed to identify NBTD and ABTD. A multiple regression model is performed that relates the incentives of earnings management and tax management to ABTD. The relevant hypotheses about whether the incentives and likelihoods of tax management and earnings management result in a large level of ABTD are tested. To test the value relevance of BTD in an emerging capital market, the one-year-ahead earnings regression model and return model are proposed. Chapters 8 and 9 report the

descriptive statistics, regression results and sensitivity analysis regarding the testing for EM/TM hypotheses and value relevance hypothesis, respectively. Chapter 8 presents that ABTD is positively associated with most of the incentives for EM and TM, suggesting it is an appropriate measure of EM and TM. Chapter 9 reports that BTD and its components are incrementally informative for future earnings and stock returns beyond current earnings in the Chinese capital markets. Chapter 10 draws together the findings and discusses the general implications of this research for theory and practice. Limitations and future research are also addressed.

# CHAPTER TWO

# LITERATURE REVIEW: BTD, EARNINGS MANAGEMENT AND TAX MANAGEMENT

## 2.1 Introduction

This chapter develops the basic theoretical and empirical foundations for this thesis, incorporating a broad-based review of the literature that pertains to the research questions. The literature is related to three areas: BTD, earnings management and tax management.

Prior research examines the information contained in BTD from two major lines. One line studies BTD from an institutional angle, emphasising BTD as a product of the discrepancy between accounting rules and tax laws. This line addresses the primary informativeness of BTD and explains the definition, components and original causes of BTD (Smith and Butters 1949, Beresford *et al.* 1983).

Another line incorporates managerial incentives and opportunistic choices, arguing that BTD is influenced by managerial practice in increasing/smoothing accounting earnings or reducing/deferring tax payments (Phillips *et al.* 2003, Mills and Newberry 2001, Plesko 2004, McGill and Outslay 2004, Desai and Dharmapala 2004, Mills 1998). These studies extend the potential implications of BTD for explaining unobserved managerial practice and provide some support relevant to the theoretical framework developed in Chapter 4.

To study the comprehensive informativeness of BTD, this chapter first reviews the BTD literature in these two lines. To understand the potential ability of BTD to proxy EM and TM and its importance, this chapter reviews the EM and TM literature in term of four aspects: (1) why and how do managers engage in EM and TM? (2) Why does detecting these opportunistic behaviours matter? (3) Why the appropriate indicator of EM and TM is the major challenge in existing literature? (4) How does BTD relate to EM and TM? As these issues are discussed separately in the literature rather than being integrated, the review follows this practice. It commences in Section 2.2 with the mechanical causes of BTD due to accounting-tax nonconformity, followed with a discussion of the opportunistic causes of BTD in Section 2.3. Section 2.4 overviews the earnings management literature relevant to the motivations and approaches of EM, challenges in detecting EM and the association between EM and BTD. Section 2.5 draws together the framework, motivations and approaches of TM. The challenges in detecting TM and the role of BTD on this issue are discussed. The tax costs and non-tax costs trade-offs literature is also reviewed to advance the understanding of the vital consideration of tax planning. Section 2.6 concludes with a summary of main points raised in this chapter.

## 2.2 BTD and Mechanical Factors

The early research in BTD is normative in nature and begins with a study of the dissimilarities between financial income reporting and tax reporting caused by the divergence of accounting rules and income tax laws (Smith and Butters 1949), focusing on the mechanical causes of BTD. The knowledge about the mechanical causes and components of BTD specified in this literature provides a conceptual understanding for BTD research.

### 2.2.1 Mechanical Causes of BTD

Considerable literature addresses the relationship between accounting and taxation in different countries (e.g. Smith and Butters 1949, Beresford *et al.* 1983, Organization for Economic Co-operation and Development (OECD)1987, Hoogendoorn 1996, Porcano and Tran 1998, Tran 1997). Two essentially different structures of relationship between accounting and taxation are distinguished: (1) dependence structure; and (2) independence structure.[5]

***Dependence Structure***

With dependence structures, accounting and tax rules are concordant because either book rules follow tax rules, or taxable income is determined by the choices made in commercial accounts. This is typical of Continental European countries, such as France, Germany, Italy, Sweden, Finland and Belgium (Hoogendoorn 1996). In these countries, financial reporting income equals taxable income, income tax expenses for the period equal income tax payable for the period. Hence, no BTD arises. The major reason for the existence of dependence structure is that accounting profit and taxable income are used by a homogenous group of users and thus are expected to be more or less identical (Tran 1997).

***Independence Structure***

With independence structures, financial reporting rules and tax laws are developed separately. Income determination for accounting purposes is distinguishing from income determination for tax purposes. Countries traditionally falling into this structure include Anglo-American countries such as the United States, the United

[5] The U.S. literature usually classifies these two different structures of relationship between accounting and taxation as "conforming" and "nonconforming" structures.

Kingdom, Canada and Australia, and hence exhibit BTD (Porcano and Tran 1998, Hoogendoorn 1996).

In the countries with independence structures, accounting rules and tax laws differ because they serve different objectives. Taking the U.S. as an example, the function of financial reporting as set in Generally Accepted Accounting Principles (GAAP) is to provide useful information to shareholders and other users of financial statements to evaluate firm performance and then make economic decisions about business enterprises and investments. Therefore, financial rules tend to prevent companies from overstating revenue or understating expenses to financial statement users and thus protect third party creditors and investors (Mills and Plesko 2003). For example, the traditional conservatism or prudence principle in financial rules requires a later recognition of doubtful income and an early recognition of doubtful losses or expenses.

In contrast, the chief objectives of tax laws are to raise revenue for governmental operations and to achieve social goals (e.g. income redistribution), economic goals (e.g. encourage firms to engage in certain economic activities by providing incentives or disincentives) and political goals. To arrive at these goals, the government often departs from Accounting Standards in determining taxable income (Beresford *et al.* 1983). As opposed to financial rules, tax laws tend to constrain taxpayers from understating revenue or overstating expenses to tax authorities and hence protect governmental revenue. One example is the tax requirement that prepaid rent received must be included as income in the year when received, even for a taxpayer on an accrual basis, despite the rent being a single payment covering several years' use. Another example is the disallowance for tax purposes of charges to establish precautionary and contingency reserves. In tax laws, neither income (profit) nor

expenses (loss) can be anticipated. The deductions of contingent provision are allowed until the contingencies become fixed (Smith and Butters 1949).

In summary, the disparity of objectives as set in accounting rules and tax laws leads to the different treatment in tax and financial reporting and subsequently raises the issue of BTD.

### 2.2.2 Composition of BTD

Differences in income and expenses measurement under two sets of reporting systems generate two sources of BTD: permanent differences (PD) and temporary differences or timing differences (TD) (Smith and Butters 1949, Beresford *et al.* 1983).

PD occurs when particular revenue or expense is recognised in the determination of accounting profit but never in the determination of taxable income, or vice versa. PD does not reverse and generally derives from governmental tax policy decisions.

For example, interest income on governmental bonds, is excluded in taxable income but recognised as income for financial reporting purpose. Another example is non-deductible expenses such as fines or penalties, which are expensed in book income but are not deducted from taxable income because allowing a deduction would be counter to public policy.

TD occurs when both tax and financial reporting recognise the same amount of income or expenses over different time periods or in different patterns. TD signals whether the revenue or expenses can be recognised in certain period under accounting rules relative to that under tax laws. Unlike PD, TD reverses over time and is ultimately net to zero.

For example, for financial reporting purpose, business revenue is not recognised until it is both realised and earned, implying that the firm must have provided the goods or service and have reasonable assurance that payment will be received. By contrast, for tax reporting purpose, revenue may be recognised on a cash basis. As a result, revenue received in advance is recognised as taxable income in the period of receipt but is not recognised as financial income in financial reports until a later period. In addition, a greater accounting depreciation deduction in the near terms relative to tax depreciation recorded in tax reporting is also a typical example.

The detailed items of PD and TD in a Chinese context are discussed in Chapter 5.

## 2.3 BTD and Opportunistic Behaviour

While the mechanical causes of BTD are widely understood, some might argue that, if BTD is caused only by the divergent financial accounting and tax treatment, the variation of BTD for companies should be relative constant under the same jurisdiction after controlling for policy and economic factors. Why does aggregate BTD change over time?

Motivated by a continued increase in BTD throughout the 1990s in the U.S. and the conjecture that the increasing positive BTD may relate to tax shelters by Treasury, some researchers begin to study BTD from a perspective of managerial incentives.[6] The notion underlying these studies is that (1) there is considerable flexibility in accounting rules and uncertainty in tax laws; and (2) opportunistic practice by

[6] Using financial statements data and tax return information, Mills et al. 2002 report the U.S. BTD increases significantly over the 1991 to 1998 period from less than $10 billion to over $150 billion. Department of the Treasury, U.S. (1999) suggests the growth of BTD over the 1990's is partial evidence of tax shelters.

management to manage (increase or smooth) book income, or manage (reduce or delay) taxable income might be one of drivers of BTD.

For example, given that financial statements are designed to provide historical information to shareholders and others to evaluate a firm's performance, the accounting rules place great weight on consistency over time within the firm, but less weight on uniformity of all firms to identical assumptions regarding their businesses' accounting rules. As a result, for different firms, managers can exercise discretion to make different determinations about the amount of revenue or expenses to recognise in any given periods (Manzon and Plesko 2002).

In addition, due to the variety and complexity of business activities, accounting rules leave considerable discretion in estimation and allow flexibility in the choice of accounting methods, such as depreciation, cost allocation or asset valuation. Therefore, managers may exploit accounting judgement in self-interested attempts, e.g. overstating income and assets for increasing compensation and stock price or understating income for creating additional reserves for future use (Mills *et al.* 2002).

Comparatively, tax laws allow fewer choices and flexibility in application of accounting methods to determine taxable income than that under accounting rules. However, in order to achieve a variety of social, economic and political goals, tax laws might vary very often and are to a large extent, complex and frequently subject to interpretation by taxpayers. As Scholes *et al.* (2002) point out, even if you could claim to have committed to memory the whole tax code, the ambiguity in how a tax return should be prepared is not easy to resolve. Despite the rigid and lengthy rules of tax laws, disputes over interpretation of the code are common. In response, managers have an opportunity to exploit this uncertainty to report less tax in order to increase post-tax returns.

Given this discretion and uncertainty, distinct incentives of managers likely lead to the differences in the amount of income reported to investors and tax authorities that might generate the variation of BTD (Manzon and Plesko 2002). Therefore, BTD may reflect opportunistic differences in accounting or tax choices (Mills and Plesko 2003).

Using publicly available data from 1988-1998, Manzon and Plesko (2002) examine the magnitude and source of BTD. They develop a fixed effect regression model to estimate the amount of variation in traditional BTD that can be explained by economic and institutional factors. The evidence shows that aggregate BTD has increased over time but a relatively small set of variables can explain this increase. They interpret "any unexplained residual as attributable to other factors, one of which may be tax-sheltering activity". Shevlin (2002) reminds the inference from this paper about tax shelters should be cautious because of any omitted variables and noises in the explained variables.

Other studies (e.g. Mills *et al.* 2002, Desai 2003, Plesko 2004) also document increasing trends in BTD in the U.S.. Consistently, Desai (2003) indicates that the institutional arrangements, such as the differential treatment of depreciation, stock option deductions and foreign source income, only explain less than 50 percent of the current BTD. He suggests that the large unexplained BTD may be partly attributable to increasing tax shelters. Although these studies do not provide direct evidence to support the inference that BTD is associated with tax planning, they suggest that BTD may be explained by other factors other than mechanical and economic factors.

The more recent research fills this gap and provides empirical support that BTD is associated with managerial opportunistic behaviour in earnings (i.e. earnings management) (e.g. Phillips *et al.* 2003, Joos *et al.* 2003). Despite some drawbacks that

exist in their research design, these empirical studies extend the conceptual understanding of BTD by incorporating the opportunistic differences into BTD research. A detail discussion on this issue is presented in Section 2.4.3.

To examine the potential association between BTD and managerial opportunistic behaviour, an understanding of the motivations and approaches of management manipulations is essential and necessary. The following sections review the EM and TM literature, highlighting the aspects relevant to research issues.

## 2.4 BTD and Earnings Management Literature

This section first reviews the earnings management literature as to the motivations and methods of EM, followed with a discussion of the approaches of detecting EM in the current literature. After evaluating the weakness of these approaches, the literature that associates BTD with EM is reviewed and argued.

### 2.4.1 Motivations and Methods of Earnings Management

The EM literature identifies several incentives to manipulate earnings, including: (1) accounting-based contracts; (2) stock market expectations; and (3) regulatory requirements (e.g. Healy and Wahlen 1999, Fields *et al.* 2001). The methods of managing earnings are also explicitly or implicitly addressed.

#### *Accounting-Based Contracts*

Contractual arrangements, such as compensation contracts and debt contracts, are designed to mitigate internal (owner-manager) and external (bondholder-shareholder and current owner-potential owner) agency conflicts due to reliance on

financial accounting numbers. However, these contracts also provide managers with incentives to manage earnings in order to increase their compensation or reduce the likelihood of bond covenant violations (Watts and Zimmerman 1978, Watts and Zimmerman 1986).

A large body of literature has emerged to test the association between contracting incentives and earnings management. Healy (1985) and subsequent studies demonstrate that bonus schemes create incentives for managers to choose current discretionary accruals to maximise the value of their bonus awards. When earnings are expected to fall between the upper and lower bound, managers make income-increasing choices. When earnings are expected to be either above the upper bound or below the lower bound, managers are more likely to choose income-decreasing accruals so that to maximise multi-period compensation. Healy's work provides a benchmark for subsequent compensation studies that improve on his methodology (Fields *et al.* 2001).

Controlling for the effects of external agency conflicts and stock-based compensation by using internal data from different business units within a single corporation, Guidry *et al.* (1999) find support for the Healy bonus plan hypothesis, showing divisional managers are likely to decrease income when the earnings target can not be met as set in their bonus plans.

Consistent with Healy's lower bound hypothesis, Elliott and Shaw (1988) and Strong and Meyer (1987) find when earnings are already below expectations or are negative for a period, some managers write-off as many costs as possible in that period with an impetus of creating reserves for future use by taking a "big bath". Chen and Lee (1995) also find firms with accounting losses are more likely to take further write-downs, i.e. "big bath" effect.

After refining the research design in Healy (1985) by using the modified Jones (1991) model and actual data on the bounds instead of estimated bounds, Holthausen *et al.* (1995) also find support for the Healy's hypothesis at the upper bound although no evidence shows that managers manipulate earnings upward around the lower bound.

In comparison with compensation contracts, the evidence on the association between debt contract and earnings management is mixed. While some studies conclude that there is little evidence of earnings management among firms approaching debt default (e.g. Healy and Palepu 1990, DeAngelo *et al.* 1994, Beneish and Press 1993), other evidence demonstrates that firms close to debt covenant violations will choose income-increasing accounting methods (DeFond and Jiambalvo 1994, Sweeney 1994).

Using the firms' debt-equity ratio as a proxy for closeness to debt covenant constrains in cross-sectional regressions, initial studies examine the effect of debt covenants on accounting decision and conclude that the larger the firms' debt-equity ratio, the more likely the firms' managers are to shift reported earnings to the current period from future periods (e.g. Christie 1990). DeFond and Jiambalvo (1994) and Sweeney (1994) extend prior literature by examining a sample of firms that actually violated a lending covenant and adopting cross-sectional and time-series model of normal accruals. DeFond and Jiambalvo (1994) find that abnormal accruals are significantly positive in sample firms in the year prior to the covenant violation, interpreting this as evidence of earnings management. In the year of violation, they present the evidence of positive manipulation after controlling for going concern qualifications and management changes.

Sweeney (1994) also documents that covenant violators make a large number of income-increasing discretional changes in the violation year and in years following the first year of default. Managers of 130 default firms make 205 accounting changes in the period from five years prior to two years following the year of default and 76 percent of these changes are income-increasing. In addition, the covenant violators are more likely to manipulate earnings than a sample of control firms matched by industry, size and time period.

***Stock Market Expectations***

Apart from accounting-based contracting motivation, the widespread use of accounting information by investors and financial analysts to evaluate stocks value induce managers to manipulate earnings in an attempt to influence stock price performance (Healy and Wahlen 1999). Numerous studies have investigated capital market-based incentives for earnings management, such as equity valuation and the cost of capital.

Aharony *et al.* (2000) present empirical evidence that accelerating credit sales is a low-cost method for B-shares companies' earnings management in China and is widely used by unprotected stated-owned enterprises (SOE) before initial public offerings (IPO). They find that total accruals of unprotected SOE decline but the cash flows from operation increase after the IPO. The firms manage accounting accruals to boost earnings and/or list those business units with temporarily high profits resulting from high accounting accruals during the process of financial packaging.

Other studies have examined whether earnings are managed to meet the expectation of financial investors, investors or management. For example, Perry and

Williams (1994) report that managers manipulate discretionary accruals to understate earnings, presumably in the hope of reducing the share price.

Burgstahler and Dichev (1997) demonstrate that firms boost reported earnings to avoid earnings decreases and losses. Kasznik (1999) finds that managers who issue earnings forecasts might manage reported earnings toward their forecasts, consistent with firms managing earnings based on stock market expectations.

***Regulatory Requirements***

In addition to accounting-based contract and stock market motivations, three forms of regulatory motivations for earnings management have been discussed in the literature: earnings management for tax planning purpose, earnings management to reduce the risk of scrutiny and earnings management for seasoned equity offerings (SEO) (Healy and Wahlen 1999). The most common hypotheses are that firms manage their earnings to reduce or defer taxes and to avoid political costs (Fields *et al.* 2001). The evidence provided in Dhaliwal and Wang (1992) shows that firms adjusted accounting accruals by shifting permanent and temporary differences across periods to minimise the tax effect of the Alternative Minimum Tax (AMT). Guenther (1994a) investigates earnings management in response to corporate tax rate changes and reports that the decrease in tax rate resulting from the Tax Reform Act of 1986 (TRA'86) induces firms to shift net income through current accruals from the higher to the lower taxed periods.

Research on seasoned equity issues addresses that the issuing firms report income-increasing accruals around the time of equity offerings (Rangan 1998, Teoh *et al.* 1998). These positive discretionary accruals are followed with underperformance after the offering. Some literature likewise documents that listed firms inflate earnings

above the thresholds in order to gain rights to issue new equity in China (Chen 1998, Jiang and Wei 1998, Haw *et al.* 1998b, Chen *et al.* 2000). Firms also have strong incentives to withdraw loss from the book to avoid delisting and trading restriction (Chen *et al.* 2003).

In summary, the earnings management literature addresses managers' incentives to alter reported earnings in beneficial ways in contractual and regulatory contexts. These findings indicate a variety of determinants of earnings management, including increasing managers' compensation, reducing the likelihood of debt covenant violation, influencing stock market perceptions, reducing taxes, and avoiding regulatory intervention. However, how to measure the incidence of earnings management is a difficult work despite the popular wisdom that earnings management exists prevalently (Beneish 2001).

### 2.4.2 Current Approaches to Detect EM

Detecting EM is a significant issue since earnings management distorts financial reports and misleads some stakeholders about underlying economic performance of the company, thereby weakening the role of accounting in providing useful information for economic decision-making. More importantly, stakeholders can not see through earnings management and its effect on evaluation and estimation of accounting numbers (Fields *et al.* 2001). The major problem lies in managerial manipulation being largely unobservable and the difficulty in measuring the managed and unmanaged earnings (Beneish 2001).

In the earnings management literature, three approaches have been commonly used to detect managerial discretion over earnings: those based on aggregate accruals, those based on specific accruals and those based on the distribution of earnings after

management. Among them, aggregate accruals variable is widely used as a proxy for earnings management although it has been subject to significant criticism (McNichols 2000, Guay *et al.* 1996, Beneish 1997). Numerous studies have been undertaken to examine accruals in detecting EM (e.g., Healy 1985, DeAngelo 1986, Jones 1991, Dechow *et al.* 1995, Dechow and Sloan 1991, Guenther 1994a). These and other studies construct measures of abnormal (sometimes called discretionary) accruals from the residual of a regression of total accruals on explanatory variables.

However, extant studies suggest that accrual variables poorly measure the managers' discretion to manage earnings (e.g. Phillips *et al.* 2003, Guay *et al.* 1996, Bernard and Skinner 1996, McNichols 2000). For example, Bernard and Skinner (1996) argue that abnormal accruals estimate using Jones model reflect measurement error due in part to the systematic misclassification of normal accruals as abnormal accruals. Dechow *et al.* (1995) evaluate the power and specification of five discretionary accruals models such as Healy, DeAngelo, Jones, Modified Jones model and the Industry Model, they conclude that "the models all generate tests of low power for earnings management of economically plausible magnitude" (p193). The misspecification is performed due to the correlation between the magnitudes of normal accruals and past/contemporaneous firm performance. Consistently, Guay *et al.* (1996) demonstrate that accruals derived from five alternative models reflect considerable imprecision and/or misspecification.

Besides the misspecification, another weakness of accruals measure is easily ignored because most earnings management studies merely focus on earnings manipulation by means of accounting choices. Actually, earnings management can also be accomplished through real transactions (e.g. Roychowdhury 2004, Jian and Wong 2003). When earnings are managed by real activities in which operating cash

flows and earnings are generated simultaneously, accruals fail to detect this type of earnings management.

Therefore, using accruals variable as a proxy for earnings management is flawed though it is widely used in the earnings management literature. While its shortcomings have been acknowledged, it seems difficult to seek a better measure to replace it.

### 2.4.3 The Role of BTD and EM

While recent literature debates whether accruals variable is an appropriate measure of earnings management, some scholars start to examine the association between BTD and earnings management. Given that BTD addresses the different income reported to investors and tax authorities, larger BTD might imply high book income reported due to financial reporting incentives, or low taxable income reported due to tax incentives. Revsine *et al.* (1999) suggest that the ratio of pre-tax book income to taxable income can be used as a measure of accounting conservatism or aggressiveness. Penman (2001) regards BTD as a diagnostic to detect manipulation of core expenses. He indicates that, if a firm is estimated to generate higher GAAP income, it must recognise more deferred taxes.

Using confidential tax return data, Mills and Newberry (2001) present evidence that firms with incentives of earnings management have larger BTD. In particular, public firms, highly leveraged privately-held firms, and financial distressed privately-held firms all have high levels of BTD.

Phillips *et al.* (2003) reduce the measurement error in accruals metric to detect EM by using deferred tax expense (DTE) as a proxy for BTD. They find that BTD is incrementally useful beyond all three accruals-based measures to detect EM when

firms employ the strategy to avoid an earnings decline and loss. By testing three earnings thresholds (prior year's earnings, zero earnings, and analyst earnings forecasts), they conclude that BTD can supplement accruals measure in detecting EM to avoid an earnings decline and to avoid a loss. However, BTD is not incrementally useful in detecting EM to avoid failing to meet or beat analysts' forecasts.

The paper of Phillips *et al.* (2003) is the first empirical study to evaluate the usefulness of BTD as a metric of EM relative to various accruals measures, where they claim that an investigation of timing BTD will help separate management discretion from nondiscretionary choices. Assuming that GAAP allows managers greater discretion than tax laws in determining the amounts of income and expenses in certain period, managers might exploit the discretion in accounting choices to manipulate earnings. DTE, reflecting the temporary differences between book income and taxable income under two systems, can capture this discretion in financial reporting vis-à-vis tax reporting. Holding taxable income constant, the change of DTE can detect EM. For example, an increase of net deferred tax liabilities means that firms report higher pre-tax book income than taxable income, and vice versa. Considering that some tax planning activities might also create DTE, the paper performs a sensitivity analysis and concludes that positive BTD caused by tax planning does not lead to the positive relation between DTE and EM.

Building on some studies (Burgstahler *et al.* 2002, Dhaliwal *et al.* 2004, Mills and Plesko 2003, Schrand and Wong 2003) those suggest that the accruals leading to negative DTR (deferred tax ratio—deferred tax expense divided by lagged total assets) are subject to greater management discretion than the accruals leading to positive DTR, Joos *et al.* (2003) compare the persistence of negative and positive DTR across the time and demonstrate that negative DTR is less stable across time and thus it is a better predictor of EM than positive DTR. They find evidence consistent with Phillips *et*

*al.* (2003) that DTE can detect earnings management beyond total accruals and abnormal accruals, DTE can signal different earnings management strategies depending on the earnings target.

Following Phillips *et al.* (2003) and Joos *et al.* (2003), Phillips *et al.* (2004) decompose the changes in net deferred tax liabilities into eight components to determine which component can predict earnings management. They use the change of net deferred tax liability as a proxy for BTD and find that firms use revenue and expense accruals and reserves and other asset valuations to manage earnings upwards. The study addresses how firms manage their earnings although some empirical issues are argued by Krull (2004).

While the above literature extends the role and implications of BTD, unfortunately, all of them ignore the effect of institutional factors on BTD measure. One simple question emerges: what if the BTD (or DTE) is caused by the differences between GAAP and tax regulations or caused by the changes in GAAP and/or tax laws? In addition, when testing the ability of BTD to identify earnings management, permanent difference as a major component of BTD is neglected. This omission will impact the explanatory power as some earnings management activities also generate permanent difference.[7]

Furthermore, the assumption that managers manage income upward while keeping taxable income constant as made in Phillips *et al.* (2003) remains controversial. One might question: if the benefits brought from an earnings management strategy are much higher than the resultant tax cost, will firms forsake this strategy so as to pursue

[7] Firms might claim a large amount of expenses in financial reports to "take a bath" while these expenses are non-deductible or not fully deductible under tax reporting, thereby leading to PD. For example, donation, entertainment fee.

a constant tax payment? In practice, is it possible for firms to disregard the benefits from tax planning?

In summary, recent studies such as Phillips *et al.* (2003), Joos *et al.* (2003) extend prior literature by demonstrating BTD can be used to detect earnings management, and in some settings it is more useful than total accruals and abnormal accruals in accurately classifying firm-years as earnings management or non-earnings management firm-years pertaining to avoiding a loss and a earnings decline. However, there is still much to do in the empirical work, such as controlling for the effect of mechanical factors when examining the ability of BTD in detecting earnings management, measuring BTD by using both of permanent differences and temporary differences rather than singly using temporary differences.

## 2.5. BTD and Tax Management Literature

This section addresses the framework of tax management, and the motivations and forms of tax management in prior literature. It also discusses the impact of tax and non-tax costs consideration on tax management. The weaknesses of current approach in detecting tax management and the potential role of BTD are debated.

### 2.5.1 The Framework of Tax Management

In the tax management literature, the conceptual framework of Scholes and Wolfson (1992) is widely used. By adopting a positive approach to explain the role of taxes in organisations, they develop their conceptual framework around three cental themes (known as all parties, all taxes, and all costs) which provides a structure for tax management to achieve organisational goals, e.g. profit or wealth maximisation. In the framework of Scholes and Wolfson, tax minimisation is not necessarily the objective of

effective tax planning. Effective tax planning is defined as tax-favoured activity that maximises the firm's expected discounted after-tax cash flows. It "requires the tax planner to consider the tax implications of a proposed transaction for all of the parties to the transaction, to consider not only explicit taxes (tax dollar paid directly to tax authorities) but also implicit taxes (taxes that are paid indirectly in the form of lower before-tax rates of return on tax-favoured investments), to recognise that taxes represent only one among many business costs, and all costs must be considered in the planning process: to be implemented, some proposed tax plans may require exceedingly costly restructuring of the business" (Scholes and Wolfson 1992, p2).

Tax planning takes many forms, including (1) converting income from one type to another, such as selection of the type of income, transaction, or situations which are treated most favourably by the tax law, e.g. changing interest income to dividend income, choosing financial lease rather than operating lease; (2) shifting income from one time period to another, e.g. avoidance or postponement of recognition of income, alternation in the timing of incomes and deductions (deferring tax); and (3) shifting income from one pocket to another, for example, converting income from subsidiary with high tax rate to another with low tax rate (e.g. transfer pricing) (Scholes *et al.* 2002). But all of them share a common goal—reducing corporate income tax liability to maximise the firm's expected discounted after-tax cash flows.

### 2.5.2 Motivations and Approaches of Tax Management

The incentives of tax management addressed in prior literature may be summarised as follows: (1) to maximise shareholders' returns. Because taxes negatively affect the interest of firms and investors, e.g. the higher tax payment, the less net income and cash flow are. Nobody likes to pay more tax than they must and hence they spend nontrivial resource to keep the tax bite as painless as possible (Scholes *et al.* 2002); (2) to reduce the risk of tax scrutiny and political cost (Fields *et al.*

2001, Watts and Zimmerman 1978); (3) tax-based contract motivation such as after-tax compensation schemes (Dhaliwal *et al.* 2000, Phillips 2003); (4) stock market expectations. Low tax burden means high post-tax returns and a competitive advantage since tax is a possible price determinant (Ziegler 1997, Levenson 1999, Mintz 1999, Swenson 1999); and (5) high returns to investment in tax planning. Mills *et al.* (1998) indicate that an additional $1 investment in tax planning results in $4 reduction in tax liabilities on average. Consistently, Gupta and Mills (2002) also report high returns to firms that invest in tax avoidance at the state level.

Underlying these motivations, a large body of literature has shown the existence and pervasiveness of tax planning activity. For example, to achieve the goal of reduction of tax liability, firms engineer transactions that generate tax losses, convert income into a different, low-taxed firm, exclude income from taxation, and defer recognition of income into a later year. Scholes *et al.* (2002) report that, in the U.S., every year firms spend billions of dollars on tax planning. Gupta and Mills (2002) and Jacob (1996) find that firms lower their state tax burden and global taxes by means of transferring price. Guenther (1994a) demonstrates that large firms and firms with low level of long-term debt, firms with high levels of manager ownership reduce their income tax by shifting net income from the higher to the lower tax periods.

### 2.5.3 Tax and Non-Tax Costs Trade-Offs Literature

Tax planning is rewarding, however, firms can not engage in it arbitrarily due to the consideration of tax costs and non-tax costs. The trade-offs literature reveals the impact of tax costs and non-tax costs on managerial decisions and suggests that EM and TM are dependent of each other.

### *The Trade-Offs between Tax Costs and Non-Tax Costs*

Most tax-minimising strategies often result in lowering reported income, however, many financial contracts with creditors, lenders, customers, managers and other stakeholders use earnings to specify the terms of trade, influencing managers' willingness to report lower income. As a result, managers should consider a trade-off between tax costs (tax payment) and nontax costs (e.g. lower performance evaluation, lower market value of firm, lower manager compensation and higher possibility of debt covenant violations, higher political cost and tax audit cost etc.) when engaging in a tax planning activity. This conflicting consideration has drawn considerable managerial attention, especially for public firms.

The evidence from studies of public firms suggests that regulatory capital and financial reporting concerns dominate taxes (Shackelford and Shevlin 2002). Public firms exhibit less aggressive tax behaviour than private firms because they face higher non-tax costs arising from capital market pressure or agency problems (Mills and Newberry 2001, Cloyd *et al.* 1996). Klassen (1997) provides support by demonstrating manager-owned firms place a higher priority on tax management due to its lower financial reporting costs. These findings are consistent with Scholes et al. (2002)'s conjecture that firms should make trade-offs between the benefits of tax planning and the nontax costs associated with financial statement reporting, implying tax minimisation might not be the optimal business strategy.

### *The Interaction of EM and TM*

The literature in tax and non-tax costs tradeoffs is numerous, which suggests that financial accounting management and tax management are not independent (Shackelford and Shevlin 2001). Firms' strategies reflect integration of multiple factors,

including taxes and interaction of financial reporting costs and taxes, rather than tax minimisation only. The discretionary financial reporting accruals are correlated with discretionary tax accruals (Plesko 2003). Therefore, tax planning affects financial accounting choices, and vice versa. For example, to test tax effect on accounting choice, Cloyd *et al.* (1996) demonstrate that public firms are less likely than private firms to choose the conformity (i.e. increasing both tax and book or reducing both tax and book) due to higher levels of nontax costs for reporting lower tax income and of tax costs for reporting higher book income.

Although firms face incentives (based on compensation contracts, debt contracts and asset pricing) to report higher income by EM, the additional incentive to report lower taxes causes them to reach a new equilibrium with lower reported earnings. Northcut and Vines (1998) provide evidence consistent with managers balancing the benefits of tax planning and earnings management in which firms are willing to report a lower book income in order to avoid political scrutiny and future taxes prior to the Tax Reform Act of 1986 in the U.S. The evidence shown in Mills (1998) that larger positive BTD leads to more IRS tax adjustments indicates that firms can not costlessly maximise financial reporting benefit and tax saving independently.

Guenther *et al.* (1997) provide another example to show how firms trade off the conflict between financial reporting and tax objectives. They find that when recognition criteria for tax and financial reporting purposes become alike, firms prefer to reduce their taxable income by deferring income and save taxes at the cost of lower reporting earnings, consistent with other studies where firms are willing to reduce book income in order to save taxes (e.g., Guenther 1994b, Boynton *et al.* 1992, Manzon 1992, Dhaliwal and Wang 1992, Maydew 1997).

Alternatively, firms are willing to forgo tax saving so as to avoid reducing book income (Beatty et al. 1995, Hunt *et al.* 1996). By examining firms that restated financial statements in conjunction with SEC allegations of accounting fraud during the years 1996 to 2002, Erickson *et al.* (2004) present direct evidence that listed companies are willing to sacrifice substantial cash and pay additional income taxes to inflate their accounting earnings.

Ignoring deferring tax accounting, prior research asserts that firms are able to inflate book income without tax consequences or undertake substantial tax reducing activities without affecting financial reporting. Plesko (2003) estimates that for each dollar of income increasing discretionary accrual recognised for financial reporting purpose, taxable income is increased by 0.326 dollar. By contrast, firms with income decreasing accruals are estimated to reduce taxable income by 0.630 of the amount, implying that firms either exploit opportunities to recognise greater book income when the tax costs are small, e.g. in tax holidays or with tax losses, or firms enable to minimise the tax effects of increased book income through other mechanisms but keep book income constant. It is consistent with a report on Enron conducted by the Joint Committee on Taxation (2003), which points out firms are able to aggressively manage their tax reporting income by using transactions that affect only taxable income, without (or with very little) impacts on the amount of pre-tax income reported to shareholders. As reported, from 1995 to 2001, Enron created twelve transactions with more than $2 billion in additional financial accounting income through a reduction in the tax expenses.

In conclusion, the literature in this regard indicates that the consideration of tax and non-tax costs is an essential factor in tax strategy choosing. EM and TM might exist simultaneously and interact with each other due to the trade-offs between tax and non-tax costs. Those EM or TM studies with an assumption of the absence of their

counterpart may leave the interpretation of their empirical findings defective, especially when some explanatory variables of TM and EM are not orthogonal to each other.

### 2.5.4 Current Approach to Detect TM

While tax planning is prevalent in today's business, how to detect managerial manipulation in taxable income has invited considerable attention of researchers, government and financial statement users. As with detecting EM, capturing tax management is not easy, due mainly to the confidentiality of tax data and lack of an appropriate measure for TM.

#### *The Difficulty in Measuring Tax Planning*

Capturing the manipulated taxable income is extremely difficult since taxable income is not publicly available information. Some studies attempt to infer a firm's taxable income from its financial statements, such as by using the gross-up current tax expense to divide by statutory tax rate, or using current tax expense to approximate tax liability. However, doing this is fraught with problems because of the existence of tax credits, tax rate differences, consolidation, tax loss carry forwards (see Hanlon 2003 for a detailed analysis).

A typical example is shown in China where the income tax rate is not identical. Different firms might apply different income tax rates depending on firms' established location and their engaging industry (A detailed description is presented in Chapter 4). Furthermore, in a consolidated group, the related parties may obtain different applicable tax rates, e.g., 0%, 15%, 10%, 24%, and 33%. But the book income in consolidating report is not released on an individual basis. This leads to great difficulty in classifying how many income tax expenses are calculated by certain tax rate.

Therefore, using tax expenses to estimate taxable income is full of noise because the reported tax expenses cannot be grossed-up to divide by a single tax rate.

***The Drawback of ETR as a Measure of TM***

While measuring manipulated taxable income is difficult, some studies suggest that effective tax rate (ETR), may be a reasonable measure in determining how aggressively the firm pursues tax minimisation (Shackelford and Shevlin 2001). Shevlin (1999) argues that ETR (current tax expense divided by pre-tax book income), not only provides a convenient summary statistic of corporate tax burden but also is an appropriate indicator of measuring tax planning effectiveness and tax aggressiveness. In response, ETR is widely used as a proxy for tax planning (e.g. Mills *et al.* 1998, Wilkinson *et al.* 2001, Gupta and Mills 2002, Rego 2003, Phillips 2003).

ETR, being a ratio of taxes to pre-tax book income, can be measured in different ways. For example, the numerator can be income tax expenses, current tax expenses, current tax expenses plus foreign tax expenses, total tax expenses minus the change in deferred tax liabilities, total tax expenses minus the deferred tax expenses or deferred tax expenses. Similarly, the denominator may take many forms, such as taxable income, pre-tax income, operating cash flow, gross margin or working capital from operation (Wilkie and Limberg 1993, Callihan 1994). Given that taxable income is confidential and market value data are not always available, most ETR is generally calculated on an annual basis using taxes and income from financial statement data.

The problems associated with ETR measure, however, are strongly questioned in previous research (Wilkie 1992, Wilkie and Limberg 1993, Scholes *et al.* 2002, Callihan 1994, Plesko 2003). Wilkie and Limberg (1993) evaluate the ability of ETR in measuring tax burden and indicate that ETR is an unavailable and unreliable indicator

of determining cross-firm or through-time differences in tax (dis)advantage. They analyse that ETR is unavailable when firms with zero or negative pre-tax income. In empirical studies, the zero and negative ETR are usually removed from the total sample as they have no economic meanings. However, this omission leads to weak representativeness of the total observations, especially for years with general recessions.

Even if ETR is available, the reliability of ETR is threatened when (1) a profitable firm experiences net operating loss (NOL) for tax purpose; (2) different tax and/or accounting treatment exists across firms and across time; (3) tax preference and pre-tax income are not proportional, e.g. ETR is a ratio, it is hard to explain lower ETR is because firm has low pre-tax income or firm has large tax preference (positive BTD); and (4) implicit taxes exist.

For example, Scholes *et al.* (2002) argue that ETR has little economic meaning. It is deceiving and not especially useful for tax planning purpose due to its exclusion of implicit taxes. Wilkie (1992) reports the experience of NOL carryforwards can affect the estimation of ETR. In essence, when a NOL carryforward is applied in a profitable year, ETR will be understated even though no tax planning occurs.

In addition, prior studies use ETR as a measure of tax planning by assuming that firms have similar or identical tax rates, and infer that firms engaging in tax minimising strategies will have lower ETR than other firms that do not (Wilkinson *et al.* 2001). This is implausible in reality. Tax rate differential due to tax preference exists frequently because one of objectives of tax laws is to influence economy by providing incentives or disincentives to encourage certain business activities. It is arbitrary to judge a lower level of ETR as a result of tax sheltering rather than tax preference/holidays because

ETR per se contains the information of both tax planning and incentive effects of tax policy.

Therefore, ETR is an equivocal estimator of tax planning. Using ETR as a proxy for TM will introduce measure error into the results of TM examination.

### 2.5.4 The Role of BTD and TM

Extant literature predicts the role of BTD in detecting tax management is intuitive. The intuition underlying this literature is that, inconsistent financial accounting and tax reporting should be a characteristic of tax planning because the goal of tax planning is to reduce tax payment. Because BTD presents the differences in income reported to investors and tax authorities, large BTD might imply lower taxable income relative to book income, especially when this tax strategy does not affect the amount of book income.

The U.S. Treasury white paper (1999) points out one feature of corporate tax shelter is a reduction in taxable income with no concomitant reduction in book income. As a result, the growing BTD in the U.S. during the 1990s, is possible evidence of corporation's growing use of tax shelters that decrease taxable income relative to book income (Department of the Treasury 1999).

By examining the magnitude and source of BTD during the 1990s, some studies find evidence that aggregate BTD has increased over time but the growing BTD can not be explained by institutional arrangements, such as the differential treatment of depreciation, stock option deductions and foreign source income. They suggest that the large unexplained BTD during the late 1990s may be partly associated with

increased tax sheltering activities (e.g. Manzon and Plesko 2002, Desai 2003, Plesko 2004, Mills *et al.* 2002).

The descriptive evidence provided by Hanlon (2005) shows that firms with a high BTD (positive and negative) exhibit a lower ETR. Mills (1998) provides empirical evidence that proposed audit adjustments are positively related to firms' BTD, suggesting larger positive BTD implies aggressive tax reporting.[8]

As a consequence, the literature concerning the association of BTD with TM suggests that BTD may be a potential indicator of tax planning, though there is not much empirical evidence to support this prediction as yet.[9]

## 2.6 Summary

This chapter provides a broad overview of BTD, EM and TM literature. It evaluates the contributions of prior literature and analyses some research gaps in the relevant research.

Despite the broad and rapid growth in earnings management and tax management research, existing work suffers from a weak observability of managerial actions or a lack of an appropriate measurement for EM and TM (Beneish 2001, Hofmann 2002).

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[8] Tax audit adjustments include both adjustments due to tax planning (e.g. the gap of tax liability declared due to different understanding and the interpretation of tax regulations by taxpayers and tax authorities), and illegal tax evasion. Therefore, high tax audit adjustments may imply more tax planning and/or tax evasion.

[9] Lopez et al. (1998) and Desai and Dharmapala (2004) attempt to use BTD as a proxy for aggressive tax planning, but their studies are not conducted to test the ability of BTD in detecting TM. For example, the study of Lopez et al. is to examine the association between firm-level tax aggressiveness and the magnitude of earnings management. Desai and Dharmapala (2004) investigate the link between tax planning and corporate governance.

The information in BTD, institutional and opportunistic factors, found in two separate research lines, provides an opportunity to study the implications and role of BTD on this issue. The current BTD research, however, has not been conducted in a systematic and comprehensive way in terms of theoretical and empirical work. There seems to be very little effort to explicate a "theory of BTD". Relatively, the weaknesses exposed in the empirical studies can be summarised into four aspects:

(1) Much of work does not reveal the implications of BTD from a comprehensive picture as a result of the exclusion of either mechanical factors or opportunistic factors (e.g. Phillips *et al.* 2003, Joos *et al.* 2003, Desai and Dharmapala 2004). This omission raises the difficulty and noise in interpreting their findings;

(2) The measurement of BTD in empirical studies is problematic. While investigating the usefulness of BTD in detecting EM, existing empirical studies usually drop permanent differences from BTD and only use deferred taxes as a proxy for BTD (e.g. Phillips *et al.* 2003, Joos *et al.* 2003, Hanlon 2005) or gross-up total taxes to measure taxable income, thereby introducing measurement error due to credits, tax rate differences, consolidation, tax loss carry forwards (e.g. Desai 2002, Lev and Nissim 2004). Although Phillips *et al.* (2003) and Hanlon (2005) provide some reasons for focusing on deferred tax expenses, the limitation in this measurement leaves their conclusions open to further investigation;

(3) In current BTD studies pertaining to EM and TM, one common assumption is EM (TM) is undertaken in the absence of TM (EM). In so doing, taxable (book) income may act as the economic benchmark to evaluate manipulation in book (taxable) income (e.g. Weisbach 2002, Phillips *et al.* 2003, Joos *et al.* 2003, Plesko 2004, McGill and Outslay 2004). However, this assumption is inconsistent with the tax and non-tax trade-offs literature that indicates EM and TM may exist simultaneously and interact with each other (Shackelford and Shevlin 2001). As a result, the deduction that deferred tax

expenses (permanent differences) may be a proxy for EM (TM) built on the above assumption is flawed;[10]

(4) The assertion that BTD is an indicator of TM does not have much empirical support other than studies using private data (e.g. Mills 1998).

Overall, the literature review in this chapter indicates that there are still many questions unexplored in recent BTD research. In particular, the inadequacy in theory development limits the understanding of the informativeness of BTD and its usefulness in detecting EM and TM. The following chapter reviews the value relevance literature, with a focus of the relevance of BTD for the capital markets.

[10] Permanent differences (deferred tax expenses) can not detect all TM (EM) because TM (EM) may also raise deferred tax expenses (permanent differences). For example, if firms engage in TM by using straight-line depreciation for book purpose and accelerated depreciation for tax purpose, deferred tax expenses will arise. Conversely, if firms engage in EM by artificially claiming a large amount of expenses in financial reports, but these expenses are not allowed to be deducted under tax reporting rules, permanent differences will arise.

# CHAPTER THREE

# LITERATURE REVIEW: BTD AND VALUE RELEVANCE

## 3.1 Introduction

This chapter develops a theoretical foundation for the potential relevance of BTD for equity valuation. It reviews the literature of value relevance with a particular focus of the valuation role of BTD. As illustrated in Chapter 2, the informativeness of BTD has not been revealed adequately because prior BTD studies are conducted in two separate lines, ignoring either the mechanical causes or the opportunistic causes. A similar problem existed in the research into the value relevance of BTD is a split investigation of its valuation role.

The value relevance research related to BTD is made up by two lines. One research line focuses on the policy-related information (i.e. mechanical information) of BTD. They demonstrate that BTD resulting from revenue and expenses items recognised for tax and financial reporting purposes is value relevant (e.g. Guenther and Sansing 2000, Amir *et al.* 1997b, Givoly and Hayn 1992, Beaver and Dukes 1972, Barragato and Weiden 2004).

Another line concentrates on the quality-related information (i.e. opportunistic information) impounded in BTD. The notion underlying this literature is that opportunistic financial reporting (e.g. earnings management) may affect the earnings quality and decrease the value relevance of accounting information in the capital markets. If BTD may reflect information about management manipulations, there should be some associations between BTD and stock values. The research in this line

finds that the information of BTD associated with earnings quality affects the market's response on earnings and earnings expectation (e.g. Chaney and Jeter 1994, Joos *et al.* 2000, Hanlon 2005).

The review begins with the value relevance literature in terms of its general purposes, development and the key concerns. The next section moves to the specific literature as to the value relevance of BTD. In particular, the role of BTD in affecting stock returns is debated from two perspectives: the policy-related information (i.e. mechanical information) and the quality-related information (i.e. opportunistic information). Section 3.4 concludes with a summary of main points addressed in this chapter. The specific literature relevant to China is reviewed in Chapter 6 when developing the formal hypotheses.

## 3.2 Value Relevance Literature

This section outlines the value relevance literature in terms of its general purposes, development and the key concerns. The debate about whether or not managerial manipulations weaken the value relevance of accounting information is also considered.

### 3.2.1 Purposes of Value Relevance Research

Value relevance research is one of the major areas in capital market-based accounting research, which examines the association between a security price-based dependent variable and a set of accounting variables (Beaver 2002). The purpose of value relevance studies is to assess whether particular accounting variables reflect information that is used by investors in valuing firms' equity (Barth *et al.* 2001).

The notion underpinning value relevance research is that accounting figures provide information that reflects firms' performance and consequently should be reflected in stock prices. Under efficient market hypothesis (EMH), once accounting figures are released, the new information will be instantly and fully reflected in share prices (Brown 1994). The importance of this concept is that it justifies the use of the movements in share prices as the test of the usefulness of accounting information.

The theoretical foundation of value relevance studies is "a combination of a valuation theory plus contextual accounting arguments that allow researchers to predict how accounting variables relate to the market value of equity "(Beaver 2002, p462).

Holthausen and Watts (2001) conclude that value relevance studies appear to underlie two theories: "direct valuation" theory and "inputs-to-equity-valuation" theory. In "direct valuation" theory, earnings and book value of equity are intended to either measure, or be highly associated with stock prices. Under inputs-to-equity-valuation theory, it investigates that whether the accounting information input to valuation models is useful for investors in valuing firms' equity.

### 3.2.2 Development of the Literature

Starting with Ball and Brown (1968) and Beaver (1968), many researchers have devoted considerable effort on analysing the relation between stock prices and accounting disclosures in the last three decades. Among accounting variables, accounting profit (earnings) has received the most concerns in value relevance literature. Motivated by the weak explanatory power of earnings, some studies extend the focus to non-earnings information and perform subsequent fundamental analysis research.

***Earnings and Stock Returns***

Ball and Brown (1968) and Beaver (1968) pioneer the early research on the return-earnings relation. Beaver (1968) formalises the theory of information content. In his definition, a firm's earnings report is said to have information content if it leads to a change in investors' assessment of the probability distribution of future returns (or prices). He documents that the stock return variance is higher in the earnings announcement period relative to non-announcement period and concludes that accounting information is informative for stock returns.

Ball and Brown (1968) investigate the relationship between earnings reports and share returns. They find that earnings are useful for investors, in that the earnings forecast errors or earnings innovations, are significantly related to abnormal returns. Since then, numerous studies have been conducted in earnings-returns relationship (e.g. Easton and Harris 1991, Liu and Thomas 2000). Earnings variable is predicted to be value relevant as it provides useful information in the estimation of future dividends. Easton (1985) provides empirical evidence for this prediction. Beaver (1989) explains three-link inference process as: (1) current earnings are useful for predicting future earnings, (2) future earnings are an indicator of future dividend-paying ability, and (3) expected future dividends are discounted to the present to infer equity value.

While the association between returns and earnings is evident, the explanatory power of earnings, as presented in most literature, has been very weak, sometimes negligible. For example, low explanatory power ($R^2$) is common, generally being between 2%-5%, implying only 2%-5% of the change in share prices can be interpreted by the earnings information released on a given announcement date (Lev 1989).

Bernard (1989) critically reviews empirical studies of the relation between stock returns and earnings to identify models of equity valuation. He indicates that specification of the return/earnings relation has become more sophisticated over time. He cautions that the absence of many relevant factors from the simple return/earnings valuation model might interpret any results.

Ohlson (1990) argues that the theoretical underpinning of the informational perspective of accounting has its limitation and suggests more theory-based equity valuation models and a shift of the empirical research focus from the explanation of observed stock prices to the prediction of future profitability.

Since then, research has analytically and empirically examined the relevance of earnings and non-earnings information for firm equity valuation. The non-earnings information studies perform subsequent fundamental analysis research with a focus on financial statements rather than earnings only (Bauman 1996).[11]

***Non-Earnings Information and Stock Returns***

Papers by Ou and Penman (1989a), Ou and Penman (1989b) and Ou (1990) represent the early empirical studies to examine the information conveyed by financial statements through the Pr measure.[12] Ou (1990) examines the relevance of non-earnings variables in financial statement underlying a "predictive information link" between non-earnings variables and future earnings change and a "valuation link" between predicted future earnings changes and stock returns. She argues that non-earnings variables enable users to predict future earnings as some non-earnings numbers may identify the "transitory component" of current earnings and may reflect

[11] In the study of Bauman (1996), accounting information is divided into earnings information (e.g. book value, earnings, dividends) and non-earnings information (e.g. all other financial information data, earnings components).

[12] Pr means the probability of a one-year-ahead increase in earnings.

managerial decisions. As a result of that, they might provide incremental information content over and above earnings. Consistently, Ou finds that some non-earnings accounting numbers (e.g. percentage growth in the "inventory to total assets" ratio, percentage growth in the "net sales to total assets" ratio) contain information about future earnings changes not reflected in current and prior earnings. Stock prices react when investors use non-earnings information to revise their expectations regarding future earnings.

The core of the fundamental valuation model is developed by Ohlson (1995) in which, beside book value, dividends and earnings, any value-relevant information can directly incorporate into equity value (Bauman 1996). This paper represents a starting point for researchers interested in fundamental analysis study and extends the evaluation of the usefulness of accounting information from the income statement to the balance sheet, although it does not provide a fully-developed framework for fundamental analysis (Bauman 1996).

An influential paper by Lev and Thiagarajan (1993) identifies 12 financial variables (fundamentals) claimed by analysts to be useful in evaluating firms' performance and estimating future earnings, and examines the incremental value-relevance of these variables over earnings. The key findings are that fundamental signals, such as inventory, effective tax rate, audit qualification, gross margin, and R&D are all value-relevant and they add approximately 70%, on average, to the explanatory power of earnings with respect to excess returns, and, analysts should search for information other than current earnings while assessing the firm value. This paper makes three contributions to prior literature: (1) it enriches the traditional return/earnings regression by adding some independent accounting variables and identifies the economic intuition behind these fundamental signals; (2) It employs fundamental information to assess the earnings quality and documents that

fundamental signals are indicative of the growth and persistence of earnings; (3) it provides basis principle of fundamental analysis and avenue for future research (See Bauman 1996 for a analysis).

Abarbanell and Bushee (1997) supplement Lev and Thiagarajan (1993) by investigating how accounting-based fundamental signals affect the decision of market participants in the predictive perspective, e.g. the forecast of one-year-ahead earnings and long-term growth in earnings, long-term growth forecast revision, and one-year-ahead forecast error. They find the fundamental signals, such as inventory, gross margin, effective tax rate, earnings quality and audit qualification are negatively associated with future earnings and have incremental explanatory power relative to current-year earnings. The evidence also supports that analysts are aware of the future earnings information embedded in some of fundamental signals and respond to it by revising their forecasts, but analysts underact to the information in the fundamental signals about future earnings changes, leading to predictable forecast errors.

Following the spirit in Lev and Thiagarajan (1993) and Abarbanell and Bushee (1997), Zhou (2004) selects eight accounting variables as indicators of earnings quality to examine the usefulness of fundamental information in firm valuation and future earnings prediction for China's A-shares listed companies. The finding indicates that the earnings quality indicators, such as accounting receivable, provision for bad debt, and operating cash flow, have incremental explanatory power for stock returns and future earnings. The negative association is consistent with companies with lower (higher) earnings quality having poorer (better) stock returns and earnings performance in future years.

Recent literature extends prior fundamental analysis by demonstrating estimated taxable income has incremental information in explaining stock returns. For example,

Shevlin (2002) and Hanlon *et al.* (2004) report that the estimated taxable income can convey incremental information over earnings with regard to contemporaneous stock returns. Lev and Nissim (2004) demonstrate that the quality–related information in taxable income is incremental compared to that in accruals and cash flows.

In summary, the development in value relevance research has moved the work from single returns-earnings analysis to broad returns-financial statements analysis by establishing fundamental analysis studies. An advantage of fundamental analysis is that it enriches the understanding of the determinants of share prices by examining the key value-drivers other than earnings and of returns-earnings relation from a perspective of earnings quality.

### 3.2.3 The Problems in Value Relevance Research

Two major concerns addressed in value relevance research are: (1) a relatively weak explanatory and predictive power of earnings to stock prices; (2) a declining value relevance of financial statements over time (e.g. Lev 1989, Lev and Zarowin 1999, Collins *et al.* 1997, Francis and Schipper 1999).

While the evidence for an association between returns and earnings is compelling, the explanatory power of earnings has been weak despite numerous researchers incorporating sophisticated econometric modelling and more variables to refine the research design.

Lev (1989) argues that the weak returns-earnings relation is counterintuitive as the vital role of earnings play in financial information system. He attributes the

weakness partly to low quality of accounting earnings.[13] By the quality of earnings, Lev means their ability to predict abnormal returns: the higher the predictive content of earnings and other variables, the higher their quality. He suggests focusing on how alternative accounting methods affect the time-series properties and hence the predictability of accounting numbers, and studying more closely the motives, means and effects of earnings management. Lev (1989) stresses that, if accounting numbers used in regressions are not accurate in depicting the performance of the company, it is unreasonable to expect that the regression results can show strong explanatory power of earnings.

Consistently, Barth *et al.* (2001) argue that an accounting variable is judged as value relevant only if it contains information relevant to investors in valuating the firm and is measured reliably enough to be reflected in share prices, implying an unreliable accounting variable might damage the extent of value relevance, i.e. the power of explaining share prices.

Motivated by a strong claim that financial statements have lost their value relevance, Collins *et al.* (1997) investigate the changes in the value relevance of earnings and book values over the past forty years. Although they find the combined value relevance of earnings and book values has not declined over time, they are not certain whether some unknown economic phenomena are responsible for the changes in value relevance. Correspondingly, Beaver (2002) points out one of the unresolved issues in value relevance research is other purposes of financial statements. Accounting for contracting purposes is a major candidate.

[13] Lev addresses several major reasons of lower explanatory power of earnings for stock prices, including methodological shortcomings, inefficient capital market, and poor "quality" of earnings. This study exposes a focus of earnings quality.

Recent review studies such as those of Kothari (2001) and Barth *et al.* (2001) also suggest that there is much still to learn how accounting information is disseminated, interpreted and impacted into stock returns. In particular, examining the effect of earnings management on prices does matter because the investors and the market might be fixated on reported financial numbers.

### 3.2.4 Managerial Manipulation, Earning Quality and Value Relevance

A large body of literature has addressed that earnings are subject to managerial discretion because of the flexibility accorded under GAAP (e.g. Fields *et al.* 2001, Healy and Wahlen 1999, Watts and Zimmerman 1986). In addition, misalignment of managers' and shareholders' incentives could induce managers to manipulate income opportunistically, thereby creating distortions in the reported earnings (Watts and Zimmerman 1986, Healy and Palepu 1993, Healy and Wahlen 1999).

As a result of that, the debate about whether or not management discretion affects the quality of accounting information and hence impairs the value relevance of earnings is opened. Despite some studies claiming that managerial discretion can improve the quality of earnings (e.g. Hunt *et al.* 1995, Healy and Wahlen 1999, Hand 1989, Subramanyam 1996, Beaver and Venkatachalam 2000), much research supports the point that managerial discretion results in a lower quality of accounting information, namely a less "representative" indicator of the faithful performance of firms and a less persistence of earnings and consequently reduces the value relevance (e.g. Lev 1989, Hawkins and Pearlman 1978, Warfield *et al.* 1995).

Hawkins and Pearlman (1978) detail some factors relating to the quality, for example, earnings persistence, earnings predictability, consistent accounting policy, debt level, etc. They identify the changes in accounting policies or estimates, the

deferred tax portion of income tax expenses, unusual increase in debts, creditors, and borrowings as "accounting red flag", which would alert analysts to potential cases of deteriorating quality.

Similarly, Lev (1989) indicates that arbitrary nature of accounting methods and valuation techniques, lag in accounting recognition or managerial manipulation might lead to lower quality of accounting information. He stresses that manipulation of financial variables is obviously a key concern to investor as it hampers the ability of financial variables to monitor managers and to assess the value of security.

Whilst Sloan (1996) attributes less persistence of earnings performance to earnings management, the evidence in Xie (1998) supports that firms that managed earnings upward show subsequent stock price declines whereas firms with downward-managed earnings have positive returns.

Similarly, Barth *et al.* (1996) demonstrate that managerial discretion reduces reliability in that pricing multiples on loan fair values are predictably lower for banks with lower regulatory capital. A study by Christensen *et al.* (1999) finds that the greater managers' incentives for earnings management, the less informative the earnings announcement to investors. Concurring with Christensen *et al.* (1999), Marquardt and Wiedman (2004) demonstrate that opportunistic earnings management impairs the value relevance of accounting information as reflected in stock prices.

These studies address that managerial manipulation in earnings worsens the quality of financial variables and weakens their value relevance.

Likewise, a question of whether tax planning is a good news or bad news for the market raises a common concern. Some literature asserts that a lower tax burden

implies higher after-tax returns, the greater after-tax cash flows, a higher earnings per share (EPS) and a more favourable light with analysts when compared to competitors (Levenson 1999). Therefore, lowering the ETR by tax planning is a way to increase earnings (Ziegler 1997) and increase share prices (Mintz 1999, Swenson 1999).

By contrast, some studies argue that TM is a bad news for market since it frequently affects current and future earnings.[14] Lev and Thiagarajan (1993) claim an unusual decrease of ETR (except for a statutory tax change) is a negative signal about earnings persistence. Consistent with their point, Abarbanell and Bushee (1998) indicate that a decline (increase) in the ETR driven by tax planning implies earnings will not persist at current levels and bodes poorly (well) for future economic performance. Guenther and Jones (2002) also document that the changes in ETR irrelevant to statutory tax are positively related to stock returns, implying reduced tax liability by tax planning is an indicator of less persistence and weak predictability of earnings.

Despite the debates over managerial discretion, manipulations in book and taxable income necessarily trigger discretionary earnings or cash flows, misleading the investors' decision and forecast of future performance and consequently influencing share prices. This is because the investors and the market heavily rely on reported financial statement numbers. However, the investors and financial analysts are not fools. When information users perceive that the accounting data have been manipulated, they will seek out and turn to rely on other information resources.

[14] See Lev and Nissim (2004) for a detail discussion. They explain firms often reduce their taxes by smoothing current and future taxable income. Taxable income is frequently manipulated by timing of transactions. Thus, a relatively low current taxable income indicates low earnings quality.

## 3.3 The Value Relevance of BTD

A well-established financial accounting literature argues that opportunistic financial reporting (e.g. earnings management) decreases the value relevance of accounting information in the capital markets. If BTD may convey information about management manipulations, there should be some associations between BTD and stock values. This intuition motivates recent BTD literature turns to capital market studies in term of earnings quality.

Prior literature has provided evidence on the value relevance of BTD in terms of its information about different financial accounting and income tax reporting rules (e.g. Guenther and Sansing 2000, Givoly and Hayn 1992, Barragato and Weiden 2004). Recent research extends this literature by studying the information content of BTD associated with the earnings quality (e.g. Hanlon 2005, Lev and Nissim 2004), though there is sparse empirical evidence in this field.

### 3.3.1 Mechanical Causes of BTD and Share Returns

The studies that examine the effects of BTD on stock returns focus on investigating the valuation role of the temporary book-tax differences (i.e. deferred taxes) resulting from tax-effect accounting. Because accounting reporting rules require inter-period tax allocation, the income tax expense reported in the income statement is determined on the basis of pre-tax income (book income), adjusted for permanent differences between the current taxable income and book income. Deferred tax information resulting from various revenue and expenses items recognised for book and tax purposes temporarily yields the gaps between the income tax expenses and current tax liability. This requirement contributes to the recognition of deferred tax assets and liabilities. The deferred tax information has been confirmed to be value

relevant because it informs on expectations about firm's future tax-related cash flows and future earnings (e.g. Guenther and Sansing 2000, Givoly and Hayn 1992, Beaver and Dukes 1972).

Beaver and Dukes (1972) firstly report that unexpected stock returns are more highly correlated with unexpected earnings measured with deferred taxes than without deferred taxes. They conclude that the information used to set stock prices include earnings that are based on inter-period tax allocation accounting. In order to assess whether the deferred tax liability is viewed as a "real" and imminent liability and subsequently discounted by investors, Givoly and Hayn (1992) examine the relation between firm characteristics and unexpected share returns around news disclosures about the Tax Reform Act of 1986. The findings are consistent with their hypotheses, indicating that investors discount deferred liability according to the likelihood and timing of its settlement. Using a price–level model in the spirit of Feltham and Ohlson (1995), Amir *et al.* (1997) provide support that net deferred taxes and the components thereof are of incremental value relevance to investors. They find the results that "are consistent with investors' valuation of deferred taxes depending on when these deferred taxes reverse".

However, Guenther and Sansing (2000) argue that the timing of the expected deferred tax reversal does not affect firm value although they support that deferred taxes affect current earnings and provide information useful for predicting future earnings. They demonstrate that the deferred tax liabilities (assets) expected to reverse later (sooner) are not worth less (more) than that expected to reverse sooner (later), but deferred tax assets and liabilities transform book values of underlying liabilities and assets into estimates of the after-tax cash flows on which the firm's market value is based.

While most studies investigate the value relevance of deferred tax information by assuming its ability in predicting future income tax payments and future cash flows, Cheung *et al.* (1997) extend prior literature by providing first empirical evidence that deferred tax information leads to the superior forecast of future tax payments and enhances prediction of future cash flows. In so doing, they show an alternative approach to interpret the association between deferred taxes and price reaction.

However, with the exception of temporary book-tax differences, little studies examine the implication of an entire BTD (e.g. permanent differences and timing differences) for share valuation in terms of the differences between GAAP and income tax laws. A working paper by Barragato and Weiden (2004) addresses the first empirical study on this issue. They argue that, if temporary book-tax differences impact the firms' future tax-related cash flows, permanent book-tax differences should affect the time value of expected future tax payments and/or refunds. They investigate the valuation implications of PD and TD of firms granting employee stock options. Despite the flaw in the estimation of PD, they provide evidence consistent with that deferred taxes recognised for financial accounting purposes and unrecognised permanent tax assets associated with stock options are both incremental value relevant.[15]

### 3.3.2 Opportunistic Causes of BTD, Earnings Quality and Share Returns

While one of the BTD research lines suggest that BTD is associated with managerial manipulations and how to identify the reliability of financial information raises a major concern in the value relevance literature, some researchers begin to examine the potential association of BTD with stock prices in terms of financial statement quality.

[15] In the study of Barragato and Weiden (2004), permanent tax assets are measured by the difference between end of year share prices and the weight average exercise price of option outstanding, multiplied by the number of options outstanding and then by the statutory Federal tax rate of 35%.

For example, Chaney and Jeter (1994) find that deferred taxes are negatively related to security returns. The evidence shows that firms whose deferred taxes are large and high variable, the market's response to earnings is weak, indicating deferred taxes provide information about the level of noise in reported earnings. Revsine *et al.* (1999) state that "a widening excess of book income over taxable income....represents a potential danger signal that should be investigated, because...[it] might be an indication of deteriorating earnings quality" (P633). Joos *et al.* (2000) find that the association between earnings and prices weakens as deferred taxes (a proxy for BTD) increases. They interpret this result as evidence that greater book-tax disconformity signals low earnings quality.

Hanlon (2005) demonstrates that firms with large positive and negative BTD have less persistent earnings (earnings, accruals and cash flows) for one-year ahead, and have a higher level of discretionary accruals that subsequently reverse as compared to firm-years with small BTD. Investors interpret large positive BTD as a "red flag" and reduce their expectations of future earnings persistence for these firms. However, cash flow component of earnings is also less persistent for firms with large BTD, suggesting a portion of the lower persistence might be attributed to tax planning in addition to EM in accrual process.

However, there appears no explicit evidence showing that BTD is value relevant due to its quality-related information. It seems hard to ascertain the value relevance of BTD is attributed to its quality-related information or its policy-related information. This is because this different information has not been identified and discriminated. In addition, the above studies only focus on DTE rather than a total BTD. An important paper by Lev and Nissim (2004) extends prior literature by investigating the ability of the ratio of net taxable income to net book income (a proxy for taxable income) to

predict earnings growth and stock returns. They claim that this ratio is comprehensive as it reflects temporary differences, permanent differences and discretionary tax accruals. They infer that it informs on future earnings growth because this ratio reflects transitory effects of earnings management and the information about the differences between GAAP and the tax code. The results show that the ratio of tax-to-book income predicts subsequent five-year earnings growth and is strongly (weakly) related to subsequent stock returns before (after) the implementation of the Statement of Financial Accounting Standards (SFAS) No.109, in 1993. More importantly, the predictive ability about future earnings of the ratio is superior to cash flows and accruals. However, the focus of Lev and Nissim (2004) is to demonstrate the value relevance of the *estimated taxable income* rather than BTD itself.

In conclusion, prior value relevance literature associated with BTD shows two research lines. One investigates the value relevance of BTD in terms of its information about divergent book and tax reporting rules with a focus of temporary differences. An alternative research line examines the role of BTD in market pricing associated with earnings quality. However, the research in this regard is fairly limited. So far, no direct evidence shows that the value relevance of BTD is determined by its information about divergent book and tax reporting rules or information about earnings quality, or both.

### 3.4 Summary

The value relevance studies assess whether particular accounting variables used by investors affect firms' equity valuation, underlying accounting function provides useful information to reflect firm performance and affect share prices. However, the implications of value relevance research for the capital markets have been threatened by the low quality of accounting information due to managerial opportunistic behaviour. Recent evidence has demonstrated that the value relevance of accounting information has been impaired and weakened by managerial manipulations (Marquardt and

Wiedman 2004). As a result of that, how to evaluate the extent of reliability of reported accounting numbers has been a significant concern for the capital markets.

The current BTD research attempts to extend the usefulness of BTD in predicting future earnings and share pricing as a potential indicator of earnings quality. However, the inadequacy in theory development of BTD also hinders this endeavour, leading to a weak proposition.

In the next chapter, this thesis attempts to develop a theoretical framework to deepen the BTD theory, and in doing so fills the research gaps in the BTD, EM and TM and value relevance literature as illustrated in Chapters 2 and 3.

# CHAPTER FOUR

# THE THEORETICAL FRAMEWORK OF BTD

## 4.1 Introduction

As illustrated earlier, there does not appear to be any previous attempts to explicate a "theory of BTD". The split focus and the difficulty in discriminating the mechanical and opportunistic information within BTD have hindered a comprehensive understanding of the informativeness of BTD. This might also restrict the role of BTD in capturing earnings management and tax management and evaluating the earnings quality. This chapter develops a theoretical framework that interprets BTD as a function of accounting-tax misalignment, earnings management and tax management. Therefore, BTD may be an appropriate measure of EM and TM after controlling for the effect of accounting-tax misalignment and so may signify the earnings quality. It is potentially value relevant because it provides the policy-related information about different requirements in book and tax reporting and the earnings-quality-related information regarding managerial manipulations to the capital market. Both of information may aid investors to precisely evaluate and forecast firms' future performance and so may affect share returns.

The framework is conditional on two major premises: (1) accounting rules and income tax laws differ, mechanistically causing some amount of BTD; and (2) management has incentives to opportunistically manage book and taxable income (or income tax), and hence affects BTD.

Two important concepts are introduced in this framework: normal BTD (NBTD) and abnormal BTD (ABTD). NBTD refers to the mechanical differences due to the divergent reporting rules for book and tax purposes, signalling the extent of accounting-tax misalignment. ABTD refers to the opportunistic differences due to the managerial choices in accounting and tax reporting, quantifying the level of management manipulations.

The remainder of this chapter is broken into three parts. A framework of BTD is constructed in Section 4.2. The section firstly refines the definition of BTD by analysing the impact of managerial discretion in GAAP and tax laws and opportunistic incentives on BTD and the logic behind the traditional definition of BTD. Next, it discusses the effect of different earnings management and tax management strategies on variation in BTD. Importantly, two concepts of normal and abnormal BTD are developed to identify different information within BTD. The corresponding implications of this identification for the usefulness of BTD are discussed. Section 4.3 presents the reasoning concerning the value relevance of BTD by analysing how the policy-related and quality-related information impounded in BTD aid to predict future earnings, thereby affecting stock prices. Section 4.4 recapitulates this chapter.

## 4.2 The Theoretical Framework of BTD

Usually, BTD is regarded as the gap between pre-tax book income and taxable income due to different institutional arrangements for the same economic transaction underlying accounting rules and income tax laws. However, managers' opportunistic applications of accounting and tax rules also contribute to the variation in BTD. As a result, this study defines BTD as the differences between book income and taxable income due to the divergent reporting rules for book and tax purposes, and the

differences due to managerial accounting and tax reporting choices. The detailed analysis is presented as follows.

### 4.2.1 Discretion in GAAP and Tax Laws and Managerial Incentives

In countries where accounting rules and tax laws are developed separately, the conflicting objectives of the two systems lead to divergent requirements in income reporting and hence generate mechanical BTD. When different recognition in income or expenses (e.g. accrual basis and cash basis), different estimation methods (e.g. book depreciation versus tax depreciation), or different reporting entities (e.g. consolidation and separate legal entity) are adopted to report income for book and tax purposes, BTD is formulated in forms of permanent differences and and/or timing differences.

Based on this understanding, BTD is simply a product of accounting-tax misalignment. However, an important issue arises: it is impractical to require that accounting rules and tax laws specify accounting and tax treatment for each detail of business transaction because business activities are intricate and changing. This necessarily leaves considerable uncertainty in applying accounting standards and tax laws.

In addition, GAAP and tax laws per se permit considerable discretion and uncertainty in reporting practice (Fields *et al.* 2001, Healy and Wahlen 1999, Watts and Zimmerman 1986, Scholes *et al.* 2002, Manzon and Plesko 2002). For example, the standards of comparability, consistency and materiality in GAAP permit managers to exercise discretion to make different determinations about the amount of revenue or expenses to recognise in any given periods. These standards also allow flexibility in estimation and the choice of accounting methods, such as depreciation, cost allocation

or asset valuation. Likewise, tax laws are not immutable. In attempts to achieve a variety of social, economic and political goals, tax laws might often vary across time, industries and firms.

These uncertainty and discretion provide managers with opportunities in income reporting choices. When managers have different incentives to report firms' performance, they may opportunistically implement accounting standards and tax laws, thereby resulting in a distorted BTD. Assume that two firms have the same amount of BTD in the absence of any EM and TM, if one firm has economic incentives to choose aggressive accounting methods (e.g. inflating income) and to take an aggressive tax position (e.g. reducing tax payment), its BTD is expected to be larger than the one without these incentives.

As a result, theoretically, BTD reflects not only the mechanical differences resulting from accounting-tax nonconformity, but also the opportunistic differences arising from managers exploiting the discretion and uncertainty in accounting and tax rules to manage earnings and taxes for their attempts. The next section discusses how managers' opportunistic behaviour can create variation in BTD.

### 4.2.2 The Impacts of Different EM and TM Strategies on BTD

The positive accounting theory and tax planning literature demonstrate that managers have strong incentives to manage earnings and taxes (Watts and Zimmerman 1986, Fields *et al.* 2001, Scholes *et al.* 2002). The literature in tax and non-tax costs tradeoffs suggests that EM and TM are not separate (Shackelford and Shevlin 2001). Based on distinct incentives, propensity to engage in aggressive behaviour and a cost-benefit trade-off, firms may choose various strategies, including aggressive, modest and conservative strategies. For example, some studies indicate

that firms have competing incentives to increase income reported to shareholders while at the same time to minimise taxable income reported to tax authorities (Treasury 1999, Manzon and Plesko 2002, Desai 2002, Mills *et al.* 2002).

However, the literature on tax and non-tax costs tradeoffs suggests that it is difficult to pursue these conflicting incentives by engaging in aggressive earnings management and tax planning simultaneously. This is because of relatively strict expenses recognition required by tax laws and relatively strict (or conservative) income recognition set by accounting standards. As a result, most tax-minimising strategies, such as deferring taxable income or accelerating tax reductions, often result in lowering reported income.[16] Similarly, earnings-inflating strategies, such as accelerating book income or deferring expenses, also yield an increase of taxable income, leading to a high tax payment.

Therefore, some studies suggest that an optimal tax planning (earnings management) should be undertaken in the manner to decrease or smooth taxable income while keeping book income constant, or in the manner to increase or smooth book income while keeping taxable income constant (e.g. Shevlin 2002, Weisbach 2002, Plesko 2004, McGill and Outslay 2004, Phillips *et al.* 2003, Joos *et al.* 2003). Even if these ideal strategies are not accessible, the self-interested incentives and the benefits of manipulation also motivate firms to choose a relative conservative strategy where book and taxable income (taxes) are managed in a same direction, such as saving taxes by reducing book income (e.g., Guenther 1994b Boynton *et al.* 1992, Manzon 1992, Dhaliwal and Wang 1992, Maydew 1997), or inflating their accounting

[16] See Guenther (1994) for a thorough analysis. Guenther indicates that managers who accelerate accrued expenses for tax purpose will likely be accelerating accounting expenses as well. Likewise, delaying taxable income will also in many cases defer book income simultaneously. But they are not vice versa. This is because accounting rules generally try to avoid overstating revenue or understanding expenses while tax rules tend to constrain taxpayers from understating revenue or overstating expenses to tax authorities as a result of their different objectives.

earnings at the costs of paying additional income taxes (Hunt *et al.* 1996, Erickson *et al.* 2004).

As depicted in Figure 4.1, the various strategies for EM and TM may be summarised as follows: (1) managing book income while keeping taxable income (taxes) constant (denoted as B'>0 and B'<0, where T'=0); (2) managing taxable income (taxes) while keeping book income constant (denoted as T'<0 and T'>0, where B'=0); and (3) managing book and taxable income (taxes) simultaneously, either in a different direction or in a same direction (denoted as B'>T' and B'<T', where B'≠T').[17]

However, no matter which strategy firms choose, these actions necessarily raise the variation of BTD because BTD is a function of book and taxable income or a function of prima facie income tax expense and income tax payable. Therefore, the logic behind the definition of BTD is that BTD is a function of accounting-tax misalignment, earnings management and tax management. It informs of not only the discrepancy between book and tax reporting rules, but also the philosophies behind management's strategies or behaviour in managing earnings and income tax.

### 4.2.3 Defining Normal and Abnormal BTD and Its Implications

While the variation in BTD may be driven by accounting-tax divergence and management opportunistic behaviour, an important issue is how to judge the variation of BTD as a result of institutional arrangements rather than EM and TM. As a result, the identification of these two drivers is needed for clearly interpreting the changes in BTD and their distinct meanings.

[17] The symbols are defined as: B^=unmanaged book income (prima facie income tax expense), B'=managed book income (prima facie income tax expense), T^=unmanaged taxable income (income tax payable) and T' =managed taxable income (income tax payable), AR = accounting rules, TR = tax rules. The strategy that manages book and tax in a same direction and in a same amount (i.e. B'= T') is conservative but wise because this action won't raise the variation in BTD, thereby having less risk of being detected and less resultant tax adjustment costs.

Accordingly, this thesis defines the mechanical differences due to divergent income reporting requirements for book and tax purposes as "normal BTD" (NBTD). It also defines the opportunistic differences due to aggressive book and tax reporting as "abnormal BTD" (ABTD). Assuming that NBTD and ABTD may be reliably measured, the magnitude of NBTD may signify the extent of accounting-tax misalignment after controlling for the economic factors. For example, a growing or volatile NBTD may imply an increasing gap or frequent changes in the two systems. This is meaningful when studying different accounting and tax settings in different countries or the changes in institutional arrangements across time for a specific country.

Similarly, the magnitude of ABTD may measure the degree of the unobservable EM and TM. A large or volatile ABTD (positive and negative) may imply a large extent of aggressiveness or frequent manipulations. This notion is of particular importance as it rules out the mechanical effects and leaves ABTD as explained by EM and TM.

Figure 4.1 illustrates the conceptual framework of BTD developed in Sections 4.2.1, 4.2.2 and 4.2.3, where NBTD is simply a product of accounting-tax misalignment, ABTD is a result of earnings management and tax management. This can be represented mathematically as:

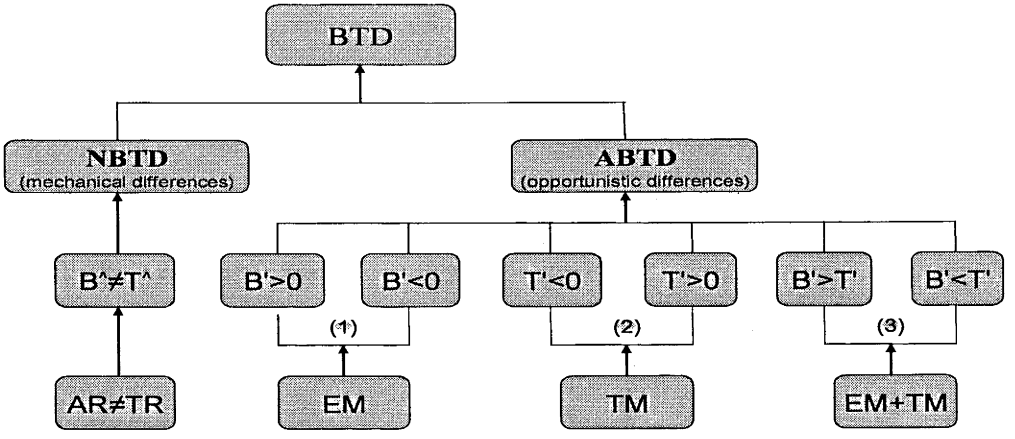
NBTD = $f(\hat{B},\hat{T})$ = *f* (unmanaged book, unmanaged tax)

ABTD = $f(B',T')$ = *f* (managed book, managed tax)

BTD = $f(\hat{B},\hat{T}) + f(B',T')$

= *f* (accounting-tax misalignment, earnings management, tax management)

Figure 4.1
The Theoretical Framework of Book-Tax Differences




The next section discusses the measurement of BTD and its components at the conceptual level.

### 4.2.4 The Measurement of BTD

An appropriate measurement of BTD is very important for precisely understanding the meaning of BTD. As argued in Chapter 2, the measurement error, such as simply using timing differences (i.e. deferred tax expenses) or permanent differences as a proxy for BTD will leave the research conclusions questionable.

Based on the definition and components, BTD can be measured accurately in two dimensions:

(1) Using book income minus taxable income or the sum of permanent differences and timing differences, called income-effect BTD;

(2) Using prima facie income tax expense (the multiplication of book income and applicable tax rate) minus current tax liability, or the sum of tax-effect permanent differences (the multiplication of applicable tax rate and permanent differences) and

tax-effect timing differences (the multiplication of applicable tax rate and timing differences), called tax-effect BTD.

Relatively, the measure of tax-effect BTD is superior to the income-effect BTD. This is because the tax-effect BTD reflects tax consequences and hence can be used to capture the tax planning strategies that reduce overall tax burden without affecting total book and taxable income in a consolidated group (i.e. income shifting). Conversely, the income-effect BTD only can capture those tax planning strategies which affect income consequences.[18]

Being the components of BTD, NBTD and ABTD can also be measured in two dimensions, i.e. income-effect and tax-effect forms. According to their definition as shown in Section 4.2.3, NBTD can be conceptually measured by using unmanaged book minus unmanaged tax (i.e. $\hat{B}-\hat{T}$) while ABTD can be measured as the gap between managed book and managed tax (i.e. $B'-T'$). Given that managed and unmanaged book and tax are not directly measured, NBTD and ABTD are estimated from total BTD. The detailed estimation of NBTD and ABTD is presented in Chapter 6.

## 4.3 The Reasoning of Value Relevance of BTD

While the potential informativeness of BTD has been conceptually revealed, this thesis attempts to examine the usefulness of BTD in valuing firms' equity. According to the principle of value relevance, this section deduces that BTD is relevant for firm valuation by analysing the predictive and explanatory power of NBTD and ABTD to future earnings and stock returns respectively.

[18] Income-effect BTD can not detect income-shifting tax strategy because this strategy only influences the overall tax payable but does not generate book and taxable income gap in a consolidated group. See an illustration of how the tax-effect BTD can address income-shifting tax strategy in a Chinese setting in Appendix 3.

### 4.3.1 The Predictive and Valuation Links

In the value relevance literature, an accounting variable is defined as value relevant if it exhibits the significant association with a measure of equity market value or stock prices (Barth *et al.* 2001, Barth 2000, Ohlson 1995, Beaver 1998). Some studies also regard an accounting variable as value relevant if it is informative for evaluating firms' performance and estimating future earnings and this predictive information has been reflected in stock prices (Ou 1990, Lev and Thiagarajan 1993, Abarbanell and Bushee 1997).

One maintained hypothesis in most capital markets-based studies in accounting is the efficient market hypothesis (EMH), in that new information will be instantly and fully reflected in stock prices. Under EMH, the rationale of value relevance is established by the following predictive and valuation links: (1) the basis theory suggests that stock price is the present value of expected future dividends (e.g. Ohlson 1995) or future benefits accruing to equity holders; (2) future dividend-paying ability is determined by future performance, i.e. future earnings and/or future cash flows; (3) future performance is predicted by current or historical accounting data. Therefore, the accounting data that affects evaluating future performance or estimating future earnings/cash flows may be correlated with share prices, such as current earnings, current cash flows, taxable income, ETR, inventory, accounts receivable. This is because the stock return's response to the prediction of future earnings changes is beyond its response to current earnings (Ou 1990). Likewise, the prediction of future cash flows is important because future cash flows determine the ability of future dividends payment and the expected returns to investors. Thus, a firm's ability to generate cash flows may affect the values of its security.

Following these two-links, this thesis deduces that BTD should be value relevant because (1) its policy-related information about different income reporting requirement for book and tax purposes may reveal some transitory earnings components, thereby aiding the prediction of firms' future tax-related cash flows and future earnings; and (2) its quality-related information about managerial manipulations may reflect the distortions in reported earnings and cash flows, thereby affecting the investors' estimation and forecast of firms' future profitability. A detailed discussion is presented as below.

### 4.3.2 The Value Relevance of NBTD

This section firstly hypothesises that the policy-related information in BTD (i.e. NBTD) is of value relevance because the differences in income reporting requirements for book and tax purposes may inform investors of future earnings and cash flows.

Different income reporting requirements in accounting and tax rules raise the issue of BTD in forms of timing differences (i.e. deferred taxes) and permanent differences. The inference of the value relevance of NBTD rests on the linkages between deferred taxes and future tax payment, permanent differences and future earnings. Deferred tax information resulting from various revenue and expenses items recognised for book and tax purposes yields the gaps between income tax expenses and current tax liability temporarily. As a result, the magnitude of net deferred taxes has an effect on current tax-related cash flows. In particular, the reversal of these temporary differences in near future affects future tax payment and hence informs of share price.[19] For example, the reversal of deferred tax liabilities will increase future tax

[19] In brief, income tax expense = (pre-tax book income +/- permanent differences) * tax rate, current income tax liability = (pre-tax book income +/- permanent differences +/- temporary differences)* tax rate. Thus, the size of temporary differences affects current tax-related cash flows while permanent differences affect current earnings. Cheung et al. (1997) provide direct evidence that deferred tax information enhances the prediction of future cash flows.

payment while the reversal of deferred tax assets will reduce future tax payment. This has been confirmed by Guenther and Sansing (2000), Amir *et al.* (1997), Givoly and Hayn (1992), Ayers (1998), Cheung et al. (1997) and others.

Likewise, permanent differences (PD) deriving from different recognition in permanent items directly affect the calculation of income tax expenses and hence influence current post-tax earnings. For example, holding pre-tax earnings constant, higher (lower) positive PD implies higher (lower) income tax expenses, leading to lower (higher) current post-tax earnings. This information implicitly informs on firms' future performance since current earnings are a significant predictor of future earnings. In addition, PD also contributes some transitory components to current earnings because PD is uncertain and varies with different objectives of institutional settings (e.g. tax preference, non-deductible expenses, non-taxable income). Therefore, PD information is hypothesised to be associated with share prices although there is no much empirical support other than the study of Barragato and Weiden (2004), where they demonstrate that PD is incrementally value relevant.

Taken as a whole, NBTD, consisting of temporary and permanent differences, is conjectured to be relevant for share pricing because it informs of future cash flows and future earnings.

### 4.3.3 The Value Relevance of ABTD

This section argues that the quality-related information in BTD (i.e. ABTD) is relevant for equity valuation because the implied information about earnings management and tax management may be informative of the persistence of current earnings and cash flows, thereby affecting the investors' evaluation and expectation of firms' future performance.

Accounting information is subject to manipulation because the fixation on reported financial numbers of the investors and market induces management to manipulate the value-relevant financial variables for their self-interests (Kothari 2001). Prior literature suggests that earnings management aims to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company, or to influence outcomes that depend on reported accounting numbers (Healy and Wahlen 1999).

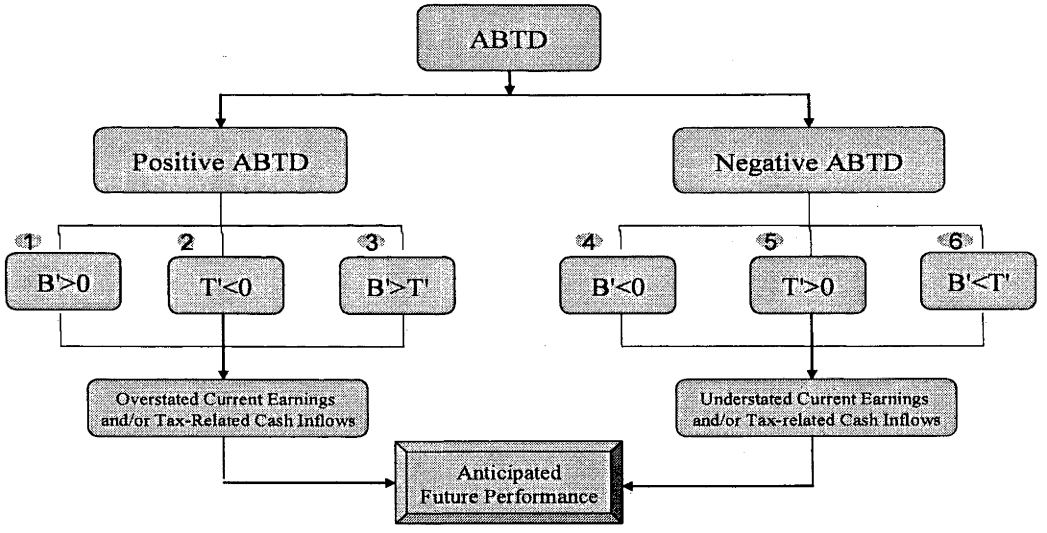
Tax management aims to influence a firm's expected discounted after-tax cash flows (Scholes *et al.* 2002). These opportunistic behaviours necessarily trigger the distortion of reported earnings and cash flows, e.g., an overstatement or understatement. The consequential noise in reported performance will affect investors' expectations of future benefits, thereby influencing share prices.

The potential for ABTD to be value relevant lies in it reveals these distortions and informs investors of their impact on future performance. As defined in Section 4.2, ABTD is the differences between managed book and managed taxable income. Its variation reflects the extent of EM and TM (i.e. the distortions in reported earnings). Figure 4.2 illustrates how ABTD informs investors on the distortions in reported earnings and cash flows and future performance.

As summarised in Section 4.2.2, there appear six typical management manipulations as analysed in prior literature. These are presented schematically in Figure 4.2, in which scenarios 1, 2, 4 and 5 hypothesise that firms *singly* engage in either EM (denoted as $B'>0$ and $B'<0$, i.e. $T'=0$ ) or TM (denoted as $T'<0$ and $T'>0$, i.e.

B'=0).[20] In scenarios 3 and 6, firms are hypothesised to engage in *both* EM and TM (denoted as B'>T' and B'<T', where B'≠T'). In scenario 1, 2 and 3, firms are assumed to manipulate earnings upward (boosting earnings) or/and manipulate taxable income downward (i.e. reducing or deferring taxes), leading to a positive ABTD. Thus, a positive ABTD is a result of overstated current earnings and/or tax-related cash inflows. In contrast, in scenarios 4, 5 and 6, firms manipulate earnings downward (i.e. smoothing earnings or taking a bath) or/and manipulate taxable income upward i.e. smoothing taxes), leading to a negative ABTD. Thus, ABTD signifies the levels of distortion in the current performance if these opportunistic behaviours occur.

Figure 4.2
The Association between ABTD and Anticipated Future Performance




Lev and Nissim (2004) and Sloan (1996) suggest that, when current earnings are overstated (understated), the expected growth in future earnings will be lower (higher). This may be explained as (1) overstating (understating) current earnings increase (decrease) the base of future earnings growth, thereby decreasing (increasing) future

[20] The symbols are defined as: B' = managed book income or prima facie income tax expense, T' = managed taxable income or income tax payable.

growth; and (2) overstated earnings are transitory and less persistent and will generally be followed by understated future earnings.

Current studies also argue that an understated current tax liability caused by tax planning (i.e. large positive BTD) bodes poorly for future economic performance because cash flows will not persist at current levels (e.g. Lev and Thiagarajan 1993, Abarbanell and Bushee 1997, Guenther and Jones 2002). In addition, this understatement could lead to potentially high auditing risk and high tax audit adjustments in the future, leading to a negative effect on future performance.[21]

Therefore, a positive ABTD resulting from boosting earnings or/and reducing taxes may inform of a lower future performance. Conversely, a negative ABTD resulting from taking a bath or/and manipulating taxable income upward may inform of a higher future performance. For these reasons, ABTD is expected to be value relevant as it affects performance measurement and prediction.

In general, the inference is that BTD is informative for equity valuation because it may reveal both policy-related and quality-related information that have implications for the market's estimation of firms' future performance. This information is expected to be reflected in the contemporaneous stock prices.

## 4.4 Summary

This chapter constructs a theoretical framework for BTD research, interpreting BTD as a function of accounting-tax misalignment, EM and TM. The concepts of NBTD and ABTD are developed to identify the mechanical differences due to different income

[21] Some studies have demonstrated that large positive BTD leads to higher tax audit adjustments and tax audit costs despite whether the larger BTD is caused by efforts to reduce taxable income or efforts to increase book income (e.g. Mills 1998, Mills and Sansing 2001).

reporting requirements under two sets of systems and opportunistic differences due to managerial manipulations. If NBTD and ABTD can be reliably measured, NBTD may be used to estimate the extent of accounting-tax nonconformity while ABTD may be used to proxy the existent and incidence of unobserved EM and TM.

Building on the prediction and valuation links, this chapter presents a comprehensive reasoning of the value relevance of BTD by analysing the information embedded in NBTD and ABTD and assessing their potential roles in equity valuation. It concludes that BTD should be value relevant because its policy-related information in NBTD about the differences between GAAP and tax laws and quality-related information in ABTD about earnings quality are sufficient to affect future earnings and share prices.

Next, this thesis attempts to test this framework by empirically investigating the usefulness of BTD in proxying earnings management and tax management and predicting future earnings and stock prices in a Chinese context. Given that variation in BTD is of jurisdictional and practical dependence, it is necessary to evaluate the particular differences between accounting and tax rules, managerial discretion in book and tax reporting, the opportunities and incentives for earnings management and tax management in a specific country. These are presented in Chapter 5.

# CHAPTER FIVE

# ACCOUNTING, TAX, CAPITAL MARKET AND BTD IN CHINA

## 5.1 Introduction

Chapter 4 establishes the theoretical framework showing that BTD is a function of accounting-tax misalignment, earnings management and tax management. It may inform investors of firms' future performance and thus is of potential value relevance. This framework is built on the existing literature that mostly drawn from the U.S., which enjoys a mature capital market, well-developed tax and accounting regimes and a rich financial information disclosure system. In the U.S., the GAAP and tax laws develop independently and the systems generate substantially mechanical variation in BTD. Further, both systems have sufficient discretion to practise prevalent earnings management and tax management. This institutional context and opportunistic practice permit hypotheses to be developed with respect to BTD, management manipulations and value relevance in the U.S.

Compared to the U.S., China has a transitory economy, an emerging capital market with developing tax and accounting systems. This provides a distinct institutional context in which to study BTD. This chapter analyses the development and features of BTD in China and discusses institutional features of China's income tax laws, financial reporting standards, and capital markets that affect BTD. The chapter evaluates whether the Chinese unique institutional arrangements and opportunistic background are likely to generate the same predictions as in the U.S. context and develop specific BTD hypotheses associated with EM and TM, and the value-relevance of BTD in a Chinese setting. In particular, the detailed disclosure requirements of BTD

for China's B-shares listed companies provide a rare empirical opportunity to conduct an in-depth BTD research that avoids much of the measurement error in BTD as shown in some U.S literature (as discussed in Chapter 2).

As indicated in Chapter 1, China's BTD emerged with the Chinese accounting and tax systems changing from a closely aligned (or dependent) system to unaligned (or independent) systems since 1985. To better understand the evolution and potential meaningfulness of China's BTD, Section 5.2 reviews the recent development of Chinese accounting and tax regimes, and Section 5.3 describes the features of the Chinese capital market and financial reporting requirements for the Chinese listed companies. This is particularly important because the disclosure requirements reveal particular aspects of BTD not readily observable in other settings. Section 5.4 identifies the institutional structure of BTD arising from IAS, Chinese GAAP and China's income tax laws. Although China's BTD has a short history, it has developed in a similar way to those in countries with a long history of BTD. To better understand the extent of similarities and differences, Section 5.5 compares the U.S. BTD and China's BTD. The final section summarises.

## 5.2 Relationship between Chinese GAAP and Income Tax Laws

As indicated in Chapter 2, BTD only arises in a non-dependent accounting-tax structure where accounting rules are determined independently of tax rules. For example, the U.S., Canada, UK and Australia have non-dependent systems, and so have exhibited BTD for many years, while Norway, France, Germany and Italy have dependent systems, and so have no BTD.

The Chinese accounting and tax systems experienced a transition from a dependent system to two distinct independent systems during the past 25 years. BTD

arose as China established its accounting standards to comply with IAS, and imported international tax practice to China's tax system. This importation and managerial and market practice not only brought some mechanical amount of BTD due to the divergence of financial accounting principles and tax laws, but also raised opportunistic variation in BTD due to managers exercising discretion in financial reporting to manage earnings, and managers exercising flexibility in tax rules to manage taxable income. This section reviews the structural changes in the Chinese accounting and taxation systems in three phases: pre 1978/1979, 1978/1979~1992/1993 and post 1993/1994. Next, this section analyses the possible impact of opportunistic factors on the emergent BTD. Section 5.2.1 describes three phases in the evolution of accounting system: centrally planned economy, move towards a market-oriented economy and internationalisation approach. In section 5.2.2, the development of Chinese taxation system is delineated by three phases: "tax-profit consistency", "tax-profit substitution" and "tax-profit separation" as illustrated in Table 5.1. Section 5.2.3 discusses the weaknesses in the current Chinese accounting and taxation systems and the resulting opportunities for management manipulations.

**Table 5.1**
**Three Phases in the development of Chinese Accounting and Taxation Systems**

| Years | Accounting Development | Taxation Development |
|---|---|---|
| Pre 1978/1979 | Centrally Planned Economy | "Tax-Profit Consistency" |
| 1978/1979~1992/1993 | Move towards a Market-Oriented Economy | "Tax-Profit Substitution" |
| Post 1993/1994 | Internationalisation Approach | "Tax-Profit Separation" |

### 5.2.1 The Development of the Chinese Accounting System

Accounting systems reflect the economic system they serve. When economic or political circumstances change dramatically, a structural change in the accounting

system is required (Chan *et al.* 1998). The development of the Chinese accounting closely links with China's social, economic and political environment. In the last 25 years, the Chinese economy has experienced a series of reforms: the transition from a centrally-planned economy to a socialist market economy, the adoption of "open door" policy, the restructuring of state-owned enterprises, and the accession to World Trade Organisation (WTO). To meet these economic and political requirements, China's accounting rules underwent a rapid development and frequent revision. These changes gradually transformed the Chinese accounting from the traditionally uniformed and rigid system which was imported from Soviet Union into a predominantly Anglo-Saxon approach (Xiang 1998). More importantly, they led to a departure of accounting rules and tax rules and generated BTD. To display a clear picture, the evolution of the Chinese accounting system is analysed from three different phases: centrally planned economy, move towards a market-oriented economy and internationalisation approach.

**Phase 1** (pre 1978): Centrally Planned Economy

Since 1949, China's accounting system was borrowed from the Soviet Union model, which was oriented towards a centrally planning economy (Chen and Tran 1995). At that time, China's economy was dominated by state-owned enterprises (SOE), which produced goods to fulfil the state's stipulated production quota and sold goods to the state at the price determined by the government. All income belonged to the government and all of the funds needed by SOE were appropriated from the state budget, and the wages of both managers and workers were determined independently of surplus (Heady and Bin 1998). The accounting system was uniform and rigid. It was a fund-based recording system designed for national economic planning and macroeconomic control rather than business purposes, deferring from accounting practice typically used in most other countries. It was argued that there was no need to know about how accounting information was produced and used by Chinese

companies due to its less participation and involvement in market (Davidson *et al.* 1996).

**Phase 2** (1978-1992): Move towards a Market-Oriented Economy

China started its reforms to transform its economic structure from a centrally planned economy to a market-oriented economy, and adopted an "open door" policy in 1978. Since then, large-scale structural changes in accounting system emerged.

(1) SOE was given autonomy and enterprise performance became a concern. SOE was converted from production units to profit centres and cost centres where managers were supposed to minimise the cost of production. Managers decided pricing, material sourcing, marketing and earnings distribution. Accounting became a decision-making tool, which focused on performance (cost/volume/profit) analysis.

(2) With the emergence of multiple forms of ownership, such as collectively owned enterprises (COE), individually owned enterprises (IOE) and foreign investment enterprises (FIE), SOE could not retain their monopolistic roles (Tang and Lau 2000). The rigid ownership-specific financial reporting system was no longer compatible with the emerging corporate environment.

(3) The establishment of the Chinese Security Markets and Stock Exchanges in 1990 and 1991 allowed the Chinese enterprises to raise capital beyond banks and the government. Thus, enterprises are required to provide accounting reports to inform shareholders and creditors of the performance and risk of the enterprises.

(4) The "open door" policy brought huge foreign direct investment (FDI).[22] With the international transactions increasing rapidly, enterprises were required to implement financial reporting practice to meet foreign investors' requirements and international standards.

[22] By the end of 1984, China had absorbed U.S$3 billion of FDI. It has been the second largest recipient of FDI in the world since 1993 (World Economic Outlook, 1994).

Before 1985, the Chinese accounting system was fund-based, rule-based and tax-based. It did not reflect the performance of enterprises. Unlike for the western accountant, little professional or managerial judgement was permitted. For example, the concept of "prudence" was not adopted for the provision for probable losses. The method of reporting inventory at the lower of cost and net realisable value was not allowed. Moreover, the accounting system was closely linked with taxation system. Tax determination and collection were the critical considerations and targets used in accounting regulations setting. Rules for measuring accounting profit were the same as those for measuring taxable income, so no BTD occurred (e.g. Chan *et al.* 1998, Tang *et al.* 2000 and Davidson *et al.* 1996).

To adapt to the new circumstances, the Chinese accounting system underwent a big revolution. In 1985, China promulgated the Accounting Law of the People' Republic of China which set up general principles of accounting for all enterprises, including the definitions of the nature and role of accounting and basic principles. Meanwhile, the Ministry of Finance (MOF) promulgated the Accounting Regulations for Joint Ventures Using Chinese and Foreign Investment (the 1985 regulation). It was the first time that the Western accounting practice was introduced to the corporate operation in China, representing a radical departure from the traditional fund-accounting (Chow *et al.* 1995, quoted in Xiang 1998). These regulations identified the concepts of assets, liabilities, capital, revenue and expenses similar to those in international accounting practice. Balance sheet, income statement and change in financial position information were adopted in the Chinese accounting system.

With the establishment of Shanghai and Shenzhen Stock Exchanges in 1990 and 1991, the MOF issued the Accounting System for Experimental Joint Stock Limited Enterprises that took effect on January 1, 1992, which was the first set of rules to incorporate international accounting practice into reporting requirements for China's

*domestic* enterprises. Due to the rapid development of the Chinese securities market, the Accounting System for Experimental Joint Stock Limited Enterprises was subsequently replaced by the Accounting System for Joint Stock Limited Enterprises (JSLE) which aimed to standardise accounting practice and disclosures by listed companies.

In 1992, the MOF issued the "Accounting Regulation for Enterprises with Foreign Investment" to replace the 1985 Regulations, aimed to move towards compatibility with international accounting practice in areas such as foreign exchange transactions, recognition of possible losses in inventory and accounts receivables.

These accounting pronouncements introduced some significant accounting concepts and essential elements of financial statements that were, in many respects, based on international practice. Accounting requirements and the function of accounting were developed in a similar way to international accounting practice even though there was no unified accounting framework that applied to all types of enterprises in China (Xiang 1998).

**Phase 3** (post 1993): An Internationalisation Approach

Until 1993, no accounting principles and standards were in force. Accounting Standards for Business Enterprises (ASBE) and the General Financial Principles for Enterprises (GFPE) took effective on July 1, 1993. These provided a conceptual framework that was similar to the formalised conceptual frameworks of the International Accounting Standards Committee (IASC), Canada and the U.S. This signified a move towards the Anglo-American approach and brought China's accounting practice closer to the IAS, albeit with a Chinese flavour. Article 11 of ASBE stated that "accounting information must be designed to meet the requirements of national macro-economic

control, the needs of all concerned external users to understand an enterprise's financial position and operating results, and the needs of management of enterprises to strengthen their financial management and administration" (Ministry of Finance, 1992 #1073).

However, the Chinese government remained the main user and regulator of financial reporting. The freedom for management to exercise discretion in accounting choices remained limited. For example, managers were only permitted to choose inventory valuation method and accounting period. More importantly for this study, accounting treatment was allowed to differ from the requirements of tax regulations, so BTD emerged (Tang *et al.* 2000). Ministry of Finance (1994) introduced the tax-payable and tax-effect accounting methods. Under the tax-effect accounting, an entity recognised the aggregate of income tax payable for the current period and the amount of income tax effect by timing differences as income tax expenses for the current period. The effect on income tax arising from timing differences should be deferred and allocated to subsequent periods.

By September 1996, drafts of 30 accounting standards were released. These detailed standards provided a practical direction for accounting application and took China's accounting practice closer to IAS and away from the ASBE. They were intended to be more flexible in the choice of accounting policies and estimates (Xiang 1998).[23] Meanwhile, to meet the requirements for China's accession to World Trade Organisation (WTO), the MOF made an effort to support international accounting harmonisation and achieve convergence of Chinese GAAP with IAS. A body of Chinese Accounting Standards was developed by the MOF from 1997 to 2002 that were broadly in line with IAS.

[23] For example, under ASBE, the selection of depreciation methods and the estimation of useful life were administrated by government rules. However, they were not required under the detailed standards.

In 2001, a new Accounting System for Business Enterprises replaced the Accounting System for Joint Stock Limited Enterprises (JSLE) from January 1, 2001 and Accounting Regulations for Foreign Investment Enterprises from January 1, 2002. The new system contained two features with important implications for this study:

(1) Managers were allowed greater discretion in accounting choices. For example, managers could select different depreciation methods, estimate useful lives and net residual values of fixed assets, use of historical cost or market value measures, and determine the amount of provision for impairment of inventory, fixed and intangible assets, short-term and long-term investments, designated loans receivable, bad debt receivable, and construction in progress.

(2) Clear definitions for the concepts of "timing differences" and "permanent differences" in tax-effect accounting were stated, allowing more consistent interpretation of BTD disclosed in financial reports.

With the intention of enabling foreign investors to assess the performance of their investments more efficiently, the differences between FIE's financial statements under Chinese GAAP and those prepared in accordance with international accounting practice were further reduced.[24] Meanwhile, as a result of the IAS offering more freedom for management discretion, the divergence of accounting rules and income tax rules were widened, increasing the levels of reported BTD at some extent. Appendix 1 details the emergence and potential increment of BTD with the performing process of Chinese Accounting Regulatory Framework of Financial Reporting. This was further intensified by changes in the tax system, as described in the next section.

[24] Chinese GAAP includes the accounting law, Accounting Standard for Business Enterprises, Chinese Accounting standards, Accounting System for Business Enterprises and some regulations for listed company disclosures issued by the China Securities Regulatory Commission.

### 5.2.2 The Development of Chinese Tax Regime—A Focus on Corporate Income Tax

To keep pace with China's recent social, economic, and regulatory reforms, its tax system also underwent three major phases of reforms: pre-1979 "tax-profit consistency", 1979-1993 "tax-profit substitution", and post-1993 "tax-profit separation" as illustrated in Table 5.1.

**Phase 1:** (pre1979): "Tax-Profit Consistency"

The importance of the taxation system in the Chinese economy was not fully recognised until the late 1970s. Under the centrally planned economy, there was no income tax on the profits of SOE because all surpluses were remitted to the government. At that time, profit was equal to income tax, called "tax-profit consistency".

**Phase 2:** (1979-1993): "Tax-Profit Substitution"

The introduction of economic reforms during the 1979 to 1993 period caused fundamental changes in Chinese tax system. First, SOE was restructured to be the major source of revenue for the government. Before 1983, instead of paying income tax, SOE was required to submit a surplus on a profit-contracting basis to the central government. In 1983, the first stage of the "tax-profit substitution" system was implemented to replace "tax-profit consistency". Large and medium-sized enterprises were required to pay income tax on profit at a rate of 55 percent and small-sized enterprises had to pay income tax at a progressive rates ranging from 7 percent to 55 percent. However, the post-tax profits were shared by the state government and the SOE in accordance with the Stated-owned Enterprise Income Regulatory Tax, which was introduced in 1984.

In 1984, the "tax-profit substitution" system entered its second stage. It was intended to completely substitute profit delivery with payment of tax. The enterprises were allowed to allocate their profit after income tax rather than sharing with the state. For the first time, the concept of taxable income was defined under the Chinese tax system (Li 1990).

Second, with the enforcement of "open door" policy, China began to design its tax system in 1979 to attract foreign investments. The Chinese-Foreign Joint Venture Income Tax for Chinese-foreign Equity Joint Ventures was introduced in 1980 and the Foreign Enterprise Income Tax for Chinese-foreign co-operative joint ventures, wholly foreign-owned enterprises and foreign companies took effect in 1982. Unfortunately, these two laws resulted in relatively higher tax rates charged for Chinese-foreign co-operative joint ventures and foreign capital enterprises, and too wide variance in terms of tax preference. To remedy these weaknesses, tax reform in 1991 combined these two laws via the Income Tax Law for Enterprises with Foreign Investment and Foreign Enterprises (known as FEITL). A flat rate of 33% (including 3% local surtax) was applied for all FIE to replace the earlier progressive rate. The FEITL included the detailed tax provisions for measuring income, deduction of expenses, depreciation or amortisation of assets, tax credits and related party transactions (Cho 1998).

In 1993, the State Administration of Taxation (SAT) was "upgraded" to report directly to the State Council. The SAT was empowered to negotiate tax treaties with other countries, determine tax policies, draft tax legislation for approval by the State Council and issue tax regulations and be responsible for the interpretation of all tax legislation.[25] From then on, tax played an important role in developing economy and

[25] See SAT (2000) (in Chinese).

raising government revenue. The proportion of total tax revenue to total government revenue increased from 48.75% in 1979 to 83.63% in 1993 (Cho 1998).

**Phase 3:** (post 1993): "Tax-Profit Separation"

By 1993, the Chinese tax system had become very complicated. There were diverse income tax rates applicable to the business organisations located in different regions because local governments abused tax preference to attract investment.[26] This damaged the total governmental tax revenue.

To unify tax laws and strengthen the central government's macro-economic control and administration of tax policies, China changed the tax administration system by establishing a tax-sharing system between central and local governments to prevent the excessive tax preferential policies. Taxes are classified as (1) tax assigned to the central government; (2) tax shared by the central government and local government; (3) tax assigned to the local government. In particular, the income tax from local enterprises contributes to the tax revenue of the local government. However, the income tax from SOEs, local and foreign banks, other financial companies, railway departments and headquarters of insurance companies is assigned as tax revenue of the central government.

Under this system, local governments were given appropriate tax autonomy to collect tax revenue for financing their services and capital investment. However, the central government retained the power to formulate tax policies and increase its shares of total tax revenue. It was intended to eliminate the discretionary tax treatment provided by local governments. However, this endeavour appeared to fail as elaborated in Section 4.2.3.

[26] In this study, local governments include provincial and municipal governments.

Two sets of enterprise income tax laws/regulations were introduced in 1994: (1) the FEITL for foreign enterprises; (2) Tentative Regulations for Enterprises Income Tax of PRC (REIT) for domestic enterprises. The REIT was applicable to state, collective, private and jointly operated enterprises as well as listed companies. Similar to the international tax practice, the regulations regarding a worldwide basis tax, depreciation rules, and inventory valuation and loss carryforwards methods were enforced. More importantly, the 1994 income tax laws clearly regulate that taxpayers must make an *adjustment* on their tax returns when book income is inconsistent with taxable income.

A flat rate of 33% is applied, indicating a significant reduction from the former tax rate of 55% for domestic enterprises and a unified tax rate for foreign and domestic enterprises. However, the REIT does not grant tax incentives or tax holidays as much as the FEITL. The extent of tax incentives is not specified in the law and is decided by tax authorities on an individual basis (Tang *et al.* 2000). This raised potential concerns as discussed in next section.

Generally, these tax reforms have made substantial structural changes in the Chinese tax system. As with the Western countries, tax has been one of the most important tools used by the Chinese government to raise public revenue and achieve its macro-economic objectives. The Chinese corporate income tax increased from 0 in 1978 to 291.95 billion yuan in 2003.[27] More importantly, the changes in the role of tax played in national economy resulted in the departure of tax rules from accounting rules. A further separation of tax and accounting profit was identified, raising a greater mechanical BTD.

[27] See CSB (2004).

### 5.2.3 Remained Issues in the Current Accounting and Taxation Systems

As discussed in Chapter 4, apart from divergence of accounting rules and tax rules, opportunistic behaviour due to managers' opportunistically exploiting the discretion in accounting rules and the complexity, ambiguity and flexibility in tax rules also contribute to the variation in BTD. When there are more opportunities of manipulations in book and tax income, the likelihood of variation in BTD increases. This section identifies the impact of the existing opportunistic factors on China's BTD by analysing remained issues in the current Chinese accounting and taxation systems.

***Accounting Environment and Supervision Mechanisms***

Despite efforts to conform to IAS an overriding objective when formulating the new Chinese accounting standards, accounting environment remains problematic. Under IAS, management is permitted a significant amount of discretion in financial reporting. Its implementation requires professional judgement from management and auditors. However, the severe shortage of qualified and well-trained accountants and auditors and the lack of professional independence in China are the two critical issues in the enforcement of standards (Xiang 1998, Lin and Chan 2000). Furthermore, the control mechanisms designed to prevent managers from using financial reporting discretion in self-interests are inadequate in China (Eccher and Healy 2000). No clear legal liability or punishment is defined for accounting manipulation by management. The rights of shareholders to sue management for misleading disclosures are not regulated. As a result, the progress towards conformity with IAS has dual implications. On the one hand, it increases the relevance and comparability of financial reporting in a global economy and results in accounting information more faithfully and prudently reflecting equity's value. On the other hand, more discretion in accounting choices

provides possibilities and opportunities for managerial manipulation, especially when monitoring of management's judgement is insufficient.

Evidence to date suggests that Chinese managers opportunistically use the discretion in current accounting standards. Eccher and Healy (2000) report that the Chinese managers are more likely to exercise greater discretion in reporting accruals, particularly through the write-down of obsolete inventory and accounts receivable allowance under IAS. Aharony *et al.* (2000) provide empirical evidence that accelerating credit sales is a widely used method for Chinese B-shares companies' earnings management before IPO.

Empirical studies and the increasing accounting scandals (e.g. YingGuangXia, Sanjiu Medical & Pharmaceutical and QiongMingYuan) have shown that earnings manipulation in Chinese listed firms is rampant (e.g. Chen 1998, Jian and Wong 2003, Haw *et al.* 1998b, Chen *et al.* 2000). This phenomenon is attributable to the lack of effective controls and infrastructure to monitor opportunistic reporting, such as sufficient supervision and scrutiny by the Chinese Security Regulatory Committee (CSRC), independent auditing (DeFond *et al.* 2000), legal protection for investors (Abdel-khalik *et al.* 1999, Eccher and Healy 2000, Lin and Chan 2000, Aharony *et al.* 2000).

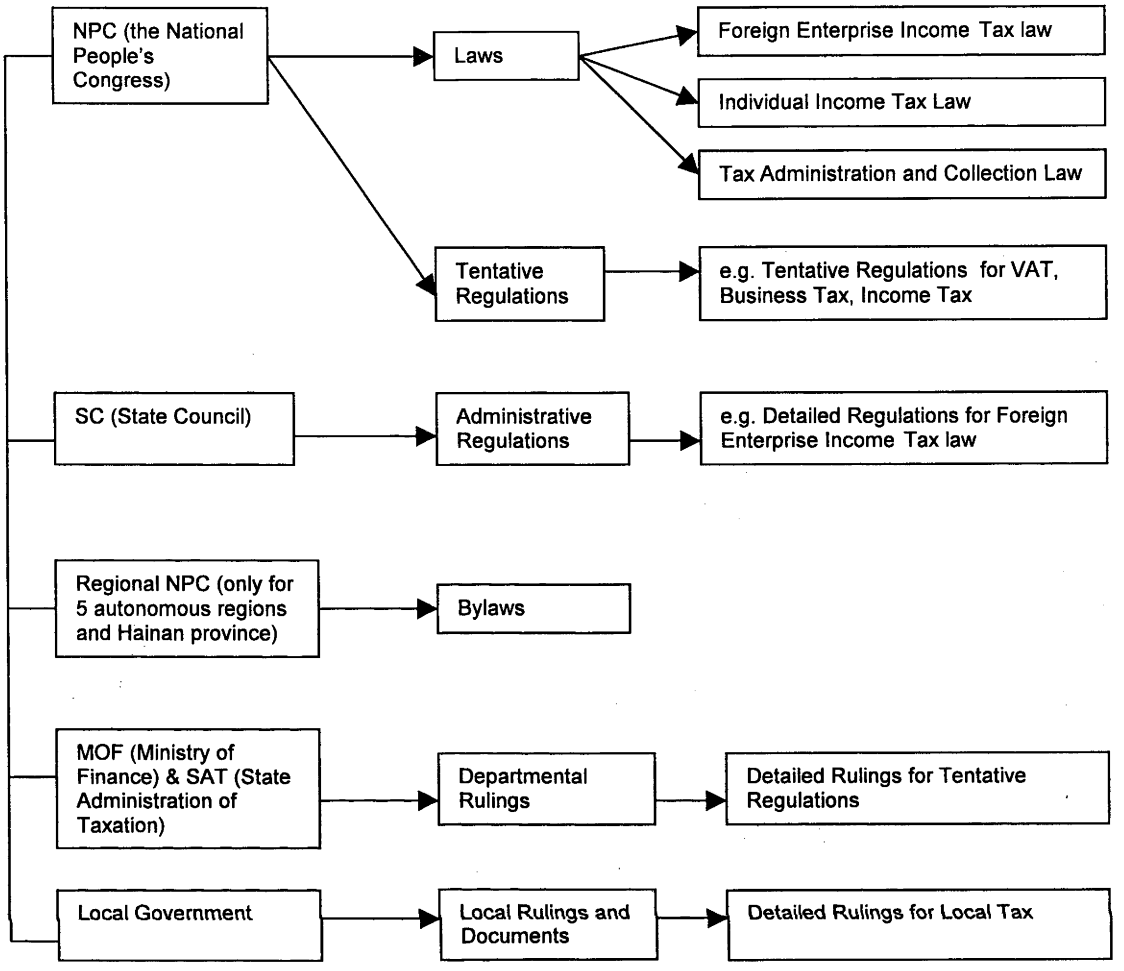
As with the problems in implementing accounting standards, the new tax system in China also generates enforcement difficulties. Some examples of these include: uncertainty of tax policies resulting from the multiple-tier tax legislations, arbitrariness of tax policies deriving from strong political-economic target, big loopholes because of uncertainty and complexity of tax laws and the weak and undeveloped tax administration system.

***The Uncertainty of Tax Policies and Multiple-Tier Tax Legislations***

In the People's Republic of China, the taxation system consists of a series of tax laws, regulations, rulings and documents formulated by the empowered authorities. The tax legislation hierarchy is presented in Figure 5.1.

Under China's Constitution, only the National People's Congress (NPC) has the power to legislate tax laws and all tax regulations and rules must comply with the laws. However, except for the Foreign Enterprise Income Tax Law (1991), the Individual Income Tax Law (1994) and Tax Administration and Collection Law (1992), there is no single, overriding tax law or code for governing the taxation of enterprises in China, e.g. domestic enterprise income tax, value-added tax. Rather, tax is imposed based on a basic law, supplementary implementing regulations, and tax-specific rulings and interpretations issued by the Minister of Finance (MOF) or the State Administration of Taxation (SAT). The MOF and SAT, as the two main sources of tax policies, are empowered to issue rulings to clarify specific issues raised by local tax authorities, taxpayers or the court. Local tax authorities are responsible for tax collection and interpretation of tax policies. The existence of diverse and unsystematic regulations raises the uncertainty and loopholes in tax laws. It provides managers with opportunities to engage in tax planning by exploiting these uncertainty and loopholes.

**Figure 5.1**
**China's Tax Legislation Hierarchy**




### *The Arbitrariness of Tax Policies and Excessive Tax Preference*

Apart from the uncertainty and ambiguity, China's tax regime is characterised by its numerous tax preference deriving from its strong incentives for encouraging exports, foreign investment and economic development in specific regions and industries. Lin (1999) analyses that the dramatic growth of Foreign Direct Investment (FDI) in China in the past a few decades is attributed to generous tax incentives. As Shalizi and Thirsk (1991) point out, the existing tax structures in most developing countries impose varying levels of taxation, depending on the form of income, the type of assets, the size and legal status of the businesses, and the kind of business activity. Such differential

treatment distorts the investors' choices with respect to the form of income, asset ownership, business organisation, the sector of investment activity, the time profile of investment.

In particular, the tax-sharing system does not reduce the conflicts between central and local governments and effectively curb the abuse of tax incentives by local governments. It is attributed to the mismatch between revenue powers and expenditure responsibilities among the various levels of government. This occurs because the most designated local taxes obtain too narrow tax base to sufficiently support the expenditures of local governments and the expenditures of local authorities have increased dramatically in recent years (Lin 2001). Although the power of local authorities to offer discretionary tax treatment is constrained under the tax-sharing system, in light of a shortage of tax revenue and self-interests, local governments either impose various fee charges to seek additional sources of revenue or offer tax exemption/extended tax preference to attract investment into their own jurisdictions (Lin 2001). For instance, tax refunds are popular and subtle tax preference offered by local governments. On the surface, taxpayers are taxed at the regulatory tax rate. Indeed, the effective tax rate is reduced by local governments' refunds. As shown in Table 5.2 and 5.3, the varying levels in corporate income tax rate for the companies located in various geographies and engaged in various industries are remarkable.

In generally, FIE and enterprises established in specific zones have priority in tax preference and tax holidays over domestic enterprises and those located in non-specific zones. Manufacturing firms are subject to more tax-favoured treatment and relative longer tax holidays than non-manufacturing. These diverse tax policies raise diverse applicable tax rates, e.g. 0%, 10%, 15%, 18%, 24%, 33% (see Tables 5.2 and 5.3).

**Table 5.2**
**Corporate Income Tax Incentives and Holidays for Foreign Investment Enterprises (FIE)**

| Tax holidays and incentives | Scope of application |
|---|---|
| **Reduced income tax rate** | |
| • A reduced income tax rate of 15% | • FIE in SEZs* and in PNDZ*<br>• FIE engaged in production in ETDZs*<br>• FIE with foreign investment over US$30 millions<br>• FIE engaged in infrastructure development and advanced technology<br>• FIE engaged in high-tech located in HTIDZs*<br>• FIE engaged in processing and assembly for export in approved boned areas |
| • A reduced income tax rate of 24% | • FIE engaged in manufacturing in COEZs* or Open cities, or in old urban districts where SEZs and ETDZs are located<br>* FIE located in National Tourism Areas designed by the State Council |
| **Start-up tax holidays and reduction** | |
| • Exemption from taxation for the first two profit-making years and a 50% tax reduction for the following three years | • FIE engaged in manufacturing for a period of not less than 10 years |
| • A 50% tax reduction for an additional three years after the five-year tax holiday | • FIE in manufacturing enterprises with advanced technology |
| • Exemption from taxation for the first five profit-making years and a 50% reduction for the following 5 years | • FIE engaged in energy, transport construction, infrastructure with operating periods more than 15 years |
| • Exemption from taxation for the first profit-making year and a 50% reduction for the following 2 years | • FIE located in SEZs engaged in service with foreign investment more than US$5 million and 10yrs operating period |
| • Exemption from taxation for 2 years and a 50% reduction for the following 2 years and a 15%-30% reduction for an additional 10 yrs | • FIES engaged in agricultural, forestry and animal husbandry with an operating term of more than 10 years |
| • Exemption from taxation for the first three years from profit-making year and a 50% reduction for the following 3 yrs | • FIE engaged in High-Tech products manufacturing and located in HTIDZ of Beijing |
| • Exemption from taxation for the first two yrs from profit-making year | • FIE engaged in high-tech located in HTIDZs* with an operating period of more than 10yrs |
| **Incentives for re-investment of profits** | |
| • A 40% refund of tax paid on the amount reinvested | • Foreign investors reinvest their profits either in that FIE or in another FIE with an operating period of more than 5 yrs |
| * A 100% refund of tax paid on the amount reinvested | • FIE reinvest their profits in an export-oriented or technology advance manufacturing enterprise |
| **Exported incentives** | |
| • A reduced income tax rate of 10% | • FIE in SEZs and ETDZs or FIEs subject to 15% income tax rate , and exporting at least 70% of total production |
| • A 50% income tax reduction for the year of export | • Foreign investors exporting at least 70% of their total production |

Sources:
Tang *et al.* (2000), National People's Congress (1991a), National People's Congress (1991b).
*SEZs: Special Economic Zones; PNDZ: Pudong New Development Zone; ETDZs: Economic and Technological Development Zones; COEZs: Coastal Open Economic Zones. HTIDZs: High-Tech Industry Development Zones.

**Table 5.3**
**Corporate Income Tax Incentives and Holidays for Domestic Enterprises**

| Tax holidays and incentives | Scope of application |
|---|---|
| **Reduced income tax rate**<br>• A reduced income tax rate of 15% | • Enterprise engaged in high technology located in HTIDZs* |
| **Tax exemptions and tax holidays**<br>• Exemption from taxation for the two years from the establishing year<br>• Exemption from taxation for the two years from the establishing year<br>• Exemption from taxation for the first year from the establishing year and 50% reduction for the second year<br>• Exemption from taxation for the two year from the establishing year and a 50% reduction for the following 3 years<br>• Exemption or reduction for 3 years<br>• Exemption from 1 Oct., 1999 to the end of 2003 | • New established enterprise engaged in high and new technology industry.<br>• New established enterprises engaged in consultancy, information or technology service industries<br>• New establishing enterprises engaged in transportation, telecommunications industries<br>• New established enterprises engaged in energy, transportation, postal service, locating in western districts<br>• New established enterprises engaged in software production<br>• New established enterprises located in "old, young, remote and poor" districts<br>• New established science and research institutions |
| **Tax refund**<br>* 18% income tax refund from local government (i.e. 15% effective tax rate). Be abolished from 31 Dec, 2001 but took effect till the end of 2002. | • For most of listed companies |

Sources:
EITL; MOF (1994a), MOF (1994b), SAT (2003), Hu (1998).
*HTIDZ: Hi-Tech Industry Development Zones.

Correspondingly, the average effective tax rate (tax as a percentage of income) and the marginal effective tax rate (the tax wedge on the after-tax rate of return) also vary substantially across enterprises with different investors and enterprises in different regions and industries. These arbitrariness and flexibility of tax policies provide more opportunities for tax strategies, especially for tax-induced income shifting.

In conclusion, the weaknesses in institutional settings provide more likelihood of earnings management and tax management and so may contribute the opportunistic differences to China's BTD.

## 5.3 China's Emerging Capital Market

Although China's capital market only has a short history, it has experienced unprecedented growth and has become the eighth largest in the world (Liu and Lu 2003). As of December 31, 2004, 1377 companies (including A and B-shares firms) were listed on two stock exchanges, with a total market capitalisation of over US$ 463 billion, nearly thirty-five times that in 1992, about 27% of China's GDP. China's listed companies had issued a total of 715 billion shares in the market, holding more than 72 million investors.[28] The Chinese capital market remains remarkable due to its rapid development and characters. To further understand the market and managerial practice in China's capital market, this section discusses the background, features of China's capital market and financial reporting requirements for listed firms.

### 5. 3.1 Background of China's Capital Market

The stock exchanges were opened in Shanghai and Shenzhen in November 1990 and April 1991 respectively. The government organised them as a vehicle to convert its socialist planned economy into a market-oriented economy. It was also regarded as a vehicle for SOE to raise capital and improve operating performance as well as lower their high ratio of debt to asset (Tang *et al.* 2000).

In the planned economy, the government strictly controlled all channels of investments. All investments made by enterprises were either from direct governmental grants or bank credits allocated by government. For SOE managers, a firm's operation and manufacturing, profit and loss were not an issue as significant as funding sources. This practice resulted in more and more SOE falling into heavy losses and

[28] See http://www.csrc.com.cn

overburdened debts. The banks were forced to issue excessive amount of currency and grant loans.[29] The government suffered a large deficit.

To solve these problems, the capital market was established, in which SOE could raise money in the ways of selling equity ownership stakes to the public and their employees (Su 2003).

### 5.3.2 Features of China's Capital Market

There are four features of the Chinese capital market that create a particular market context and managerial incentives that have implications for the hypotheses development in Chapter 6.

(1) The Chinese capital market is complicated by the multiple categories of shares: State-Shares, Legal-Person-Shares, Employee-Shares, Ordinary Domestic Individual Shares (i.e. A shares) and Foreign Individual Shares, such as B-shares, H-shares and N-shares.[30] In the domestic stock exchanges, however, two third of stocks are non-tradable (CSRC 2005). Only A-shares and B-shares are publicly tradable though all shareholders have the same rights of voting, distribution and obligations. The major differences between A- and B-shares lie in the type of investors permitted to own and trade them and the currencies used for trading and cash dividends. A-shares are traded in Renminbi (RMB) by domestic investors. B-shares are traded in either U.S.

[29] At that time, about US$600 billion bank loans are outstanding, 90 percent of the loans are given to SOE. These loans account for an unusually high proportion of all financing equivalent to about 70 percent of the GDP (Tang 2000).

[30] Government bodies such as state asset management agencies hold state-shares, or institutions authorised hold shares on behalf of the state such as wholly state-owned investment company. Any entities or institutions with a legal person status, including SOE or a company controlled by SOE, hold legal-person-shares. Both of them are non-tradable. Employee-shares are issued to employees of the issuing firm and are allowed trading only three years after the IPO if the firm can get CSRC's approval. Domestic individual shares (A-shares) can be traded and purchased by private Chinese citizens in domestic exchanges. Foreign individual shares can only be purchased and traded by the foreign investors in security exchange in China (called B-shares), in Hong Kong (called H-shares) or in New York (called N-shares).

dollars in Shanghai Exchange or Hong Kong dollars in Shenzhen Exchange, and held by foreign entities and foreign individuals, including overseas Chinese residents in Hong Kong, Macau, or Taiwan (they were opened to domestic investors until early 2001). Arbitrage among them (inter-flow of capital) is not allowed.[31] By the end of 2004, 110 listed firms issued B-shares on Shenzhen and Shanghai Stock Exchanges. Among the 110 B-shares companies, 86 also issued A-shares.[32]

(2) The Chinese government retains a majority ownership in the firms after their initial public offerings (IPO). About 73% of A-shares firms' largest shareholder is State, held by government bodies such as state asset management agencies, or institutions authorised to hold shares on behalf of the state such as wholly state-owned investment company. For B-shares firms, 80 out of 110 B-shares firms' first shareholder is State (CSRC 2005). Government intervention has been a constant. Local governments, instead of shareholder committees, appoint most of managers of listed firms.

(3) Being listed is a scarce resource for China's corporations due to fierce competition in IPO. The government controls the growth of the market by setting an annual national quota of IPO. The decision to list a company largely relies on the government's balancing the interests among different industries and geographic regions in China instead of relying on performance completely.

(4) Investors are more concerned with speculative capital gains than investment returns because capital gains from shares trading are not taxable while returns on share investment are very low, sometimes lower than the interest rates on term deposits (Tang *et al.* 2000).

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[31] The separation of A-and B-shares markets is driven by the central government's policy of restricting the foreign control of vital SOE, preventing manipulation of China's fledging stock market from abroad and the devaluation of Renminbi from excessive sales (Su, 2003).

[32] See http://www.csrs.com.cn or Shanghai and Shenzhen Stock Exchange Fact Books in 2004.

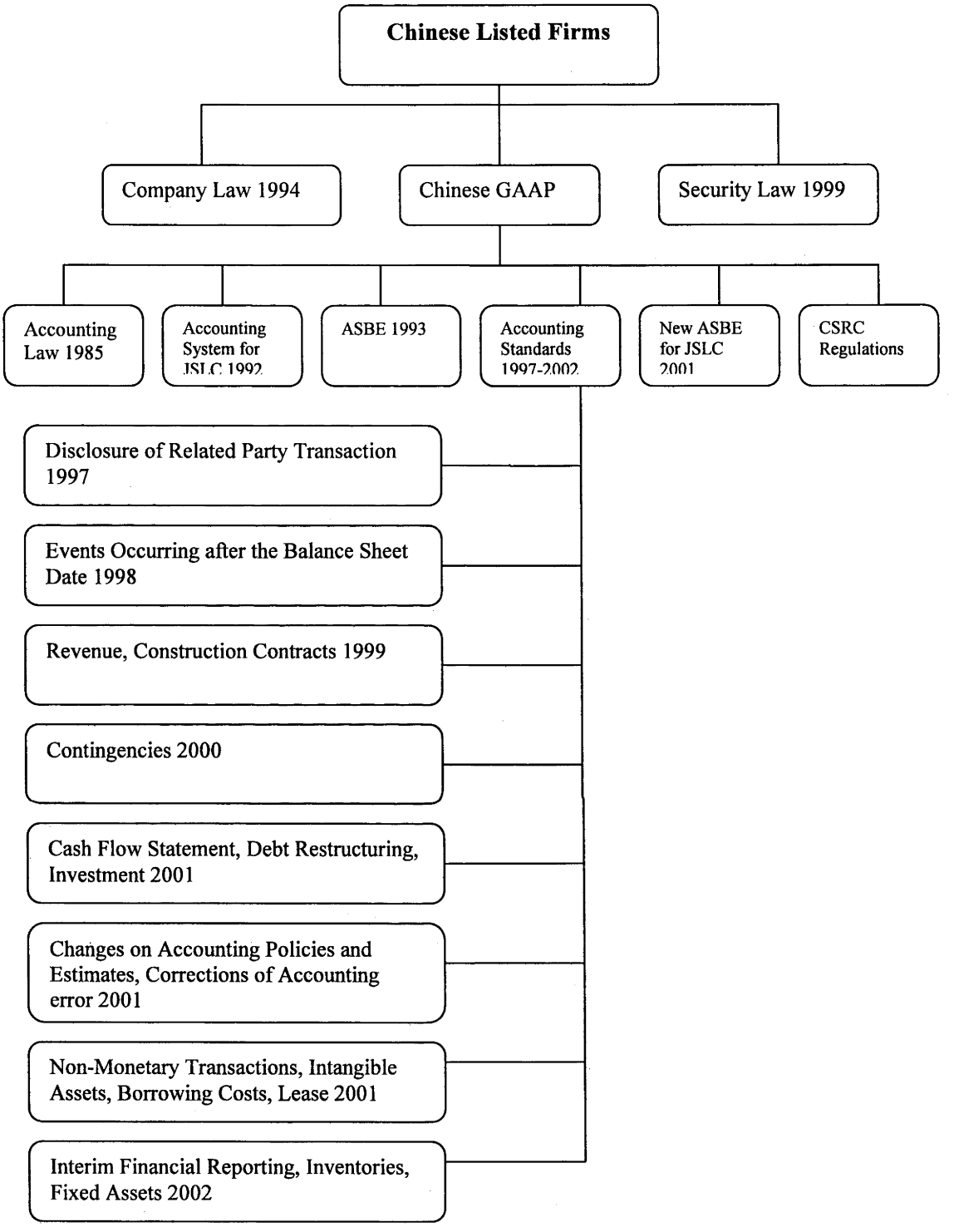
### 5.3.3 Requirements of Financial Reporting Framework for Listed Companies

Listed companies in China are subject to Security Law, Company Law, Accounting Law and special accounting and disclosure regulations issued by the MOF and CSRC as shown in Figure 5.2. A-shares companies are required to prepare their financial reports under Chinese GAAP and be audited by designated Chinese accounting firms. A summarised version of the audited annual report is required to be published in selected securities newspaper on or before April 30 following the year-end.

Based on the regulations of CSRC, China's B-shares listed firms must prepare Chinese-version financial reports under Chinese GAAP and English-version financial reports under IAS. To assure compliance with IAS, all the IAS-based financial statements of B-shares companies must be audited by internationally recognised audit firms, e.g. Big 4 auditors. These dual reporting and auditing requirements provide more information to the market (Sami and Haiyan 2004).

More importantly, the tax-effect BTD is required to release in the notes of English financial statements, where BTD is defined as *prima facie income tax expense* (book income multiply applicable tax rate) less *income tax payable* (see Appendix 2 for a detailed items of permanent differences and timing differences). This disclosure requirements are particular advantageous because it resolves the problems in estimating BTD as in the U.S. literature and provides an empirical possibility to study BTD in the Chinese context.

**Figure 5.2**
**Accounting Regulatory Framework of Financial Reporting for Listed Companies**




**Source:**
**http://www.iasplus.com/country/china.htm** provided by Deloitte Touche Tohmatsu.

## 5.4 The Institutional Structure of BTD Based on IAS, Chinese GAAP and Chinese Income Tax Laws

China reformed its accounting standards to align with IAS. The increased discretion in IAS and China's GAAP and the limited discretion existed in tax laws raises substantial variation in BTD. This section analyses the detailed institutional structure of BTD by comparing the different regulations listed in Chinese GAAP, IAS and China's Corporate Income Tax Laws.

In line with the BTD literature conducted in the Western countries, China's BTD can be classified as permanent differences (PD) and timing differences (TD). PD does not reverse and it affects current taxable income or current tax-effect taxable income rather than forwards. It is caused by four factors:

(1) The revenue recognised by accounting standards is unrecognised as revenue in determining taxable income by income tax law, such as interest on national bonds;

(2) The revenue unrecognised by accounting rules is recognised in determining taxable income, e.g. use self-products in project construction;

(3) Expense or a loss recognised by accounting standards but is not deductible from taxable income, for example, tax penalties and fines;

(4) Expense or a loss unrecognised by accounting standards but is deductible in determining taxable income, such as prepaid expenses.

In contrast, TD occurs in one period and reverses in one or more subsequent periods, which is mainly caused by the differences in timing of recognition for revenue and expenses. For example, a taxable (deductible) TD arises when certain revenue is recognised in the current (subsequent) period under accounting requirements, but the revenue should be recognised as taxable income in subsequent (current) periods under tax rules. It will increase (decrease) taxable income in future periods. In addition,

a deductible (taxable) TD arises when certain expenses or losses are recognised in the current (subsequent) period under accounting requirements, but such expenses or losses are only deductible firm taxable income in subsequent (current) periods under tax rules. This TD will decrease (increase) taxable income in future periods.

To understand the institutional structure of BTD based on IAS, Chinese GAAP and Chinese Income Tax Laws, Table 5.4 presents the detailed items of Chinese-GAAP based BTD (based on major differences between Chinese GAAP and Chinese income tax laws) and IAS-based BTD (based on major differences between IAS and Chinese income tax laws). The specific regulations on an identical transaction underlying three sets of systems are detailed for a comprehensive understanding of the mechanical causes of China's BTD.

As shown in Table 5.4, PD, as a major component of BTD, derives from 25 items. It is mainly driven by the items of non-deductible expenses and conditionally deductible expenses, non-taxable income. The specific regulations such as NOL carryforward, consolidation requirement and separate entity's tax reporting, invoice regulations also contribute to PD. Relatively, TD is a minor portion of BTD. The depreciation, amortisation of expenses and income recognition are the main causes of TD.

Table 5.4 shows that, before the issuance of CAS in 1997 and new ASBE in 2001, Chinese GAAP closely linked with income tax laws in most aspects, such as the depreciation method, useful life, residual value, provision for bad debt and cost valuation method. After the issuance of CAS and ASBE, these regulations in Chinese GAAP are set with more discretion, similar to those in IAS. The close approaching to IAS leads to a far departure of Chinese GAAP from income tax regulations and so raises a greater BTD (see Figure 5.3). More importantly, more discretion offered by IAS

and GAAP allows managers to practise prevalent earnings management and tax management for different reporting incentives.

**Figure 5.3**
**Relationships between Chinese GAAP, Income tax Laws and IAS**

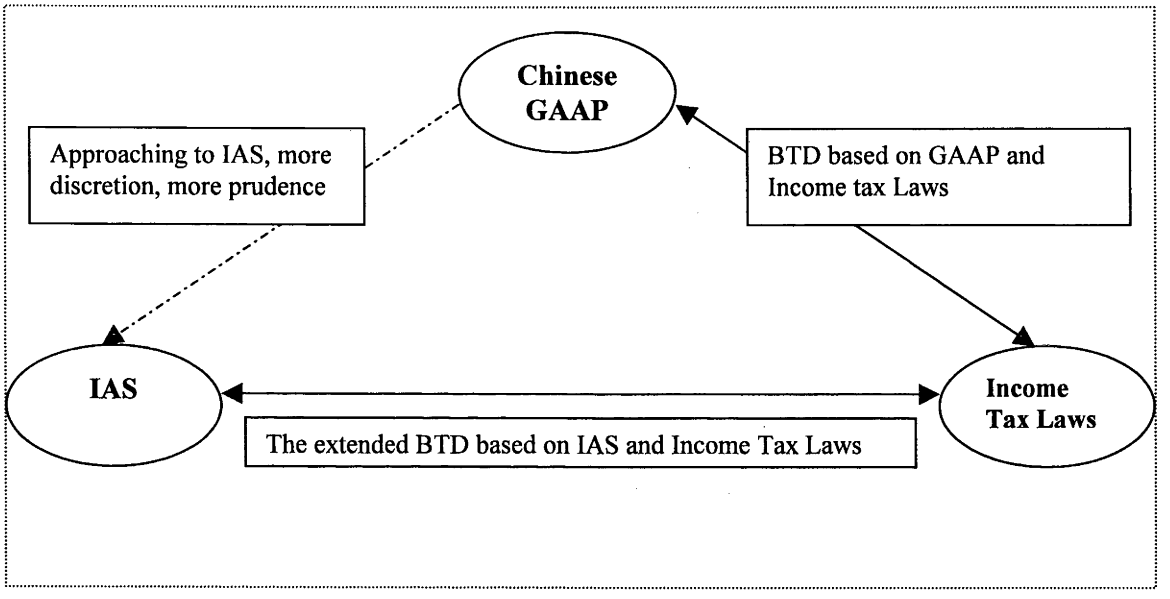


**Table 5.4**
**Chinese GAAP-based BTD and IAS-based BTD**
**(Major Differences between Chinese GAAP, IAS and Chinese Income Tax Laws)**

| BTD | Items | Chinese Income Tax Law | Chinese GAAP | IAS |
|---|---|---|---|---|
| **Permanent differences:** A. Non-deductible expenses | 1. Sponsoring cost[33]<br>2. Non-public welfare donation<br>3. Fines for illegal activities and losses due to the confiscation of property<br>4. Commission to buyer<br>5. Tax penalties and fines<br>6. Any expenditures not related to business and production operations or without authorised invoice[34]<br>7.Management fees paid to associated enterprises, consulting fees, royalties, licensing fees made by the China establishment of a foreign enterprise to its head office<br>8.Eight provision for impairment of assets | 1-7. Non-deductible under tax law.<br>8. Only provision for bad debt is deductible. | 1-7. Actual expenses are charged.<br>8. Under new ASBE (2001), provision for impairment of inventory, fixed and intangible assets, short-term and long-term investments, designated loans receivable, bad debt receivable, and construction in progress can be made and charged to expenses when made. | 1-7. Actual expenses are charged.<br>8. Charged to expenses |

[33] Sponsoring cost distinguishes from advertisement fees in China. Advertisement fee is defined as the expenses on business promotion through medium such as TV, radio, newspaper.

| | | | | |
|---|---|---|---|---|
| B: Conditionally deductible expenses | 9. Bad debt | 9. Allowed to be deducted less than 0.3% (0.5% after 2000) of year-end outstanding A/C for enterprise engaged in financing and leasing.[35] | 9. Maximum ceiling, e.g. 3% of A/C for companies with foreign capital and 0.3-0.5% for industrial companies. Under new ASBE (2001), determined based on management judgements | 9.No maximum requirements, determined based on management judgments |
| | 10.Entertainment fees | 10.Entertainment fees should be less than 0.5% of the net sales for the first RMB15million, plus 0.3% on sale in excess of RMB 15 million | 10. No limitation | 10. No limitation |
| | 11.Interest | 11.Interst rate is limited at a commercial rate, the excess can not be deducted | 11. No limitation | 11. No limitation |
| | 12.Employees salaries for domestic enterprises | 12. The standard of salaries payment is stipulated based on different areas and industries. The excess payment can not be deducted.[36] | 12. Charged when incurred | 12.Charged when incurred |
| | 13.Welfare, union fees and education fees for domestic enterprises | 13. Provision of 14%, 2% and 1.5% of the total salaries payment is required; the excess part can not be deducted. | 13. Actual expense is charged | 13.Actual expense is charged |
| | 14. Donations | 14. Deductible donation is limited | 14. No limitation | 14. No limitation |

[34] In China, invoice management is very strict and deemed as an effective tool for measuring income and expenses. Under the Tax Administration and Collection Law, enterprises must purchase authorised invoices from tax authorities once established. They must provide stamped invoices with serial numbers to customers when selling goods or providing services. The tax authorities determine the enterprise's revenue based on the amount listed on invoices. On the other hand, all expenses or costs can not be deducted without authorised invoice even they really occur.

[35] SAT[2000] No.84, see SAT(2003).

[36] SAT[1994] No. 009, see SAT (2003).

[37] SAT[1999] No.49, see SAT (2003).

| | | | | |
|---|---|---|---|---|
| | | less than 3% of taxable income per year. | | |
| | 15. Research and development costs | 15. Deductible. For profitable company, if R&D is 10% higher than last year, additional 50% of R&D can be deducted from taxable income after approved by local tax office.[37] | 15. Expense all R&D (except that patent registration and legal costs are capitalised) | 15. Expense all research costs. Capitalise development costs if certain criteria are met. |
| C: Taxable Income | 16. Insurance compensation or indemnity insurance received due to natural disaster or accident | 16. Included in taxable income | 16. Offset the abnormal losses | 16. Offset the abnormal losses |
| | 17. Use self-products for construction, investment, sponsorship, donations, or welfare | 17. Deemed as sales. The revenue evaluated based on market value is taxable.[38] | 17. No income realised | 17. No income realised |
| | 18. Donations received | 18.Donations received in cash and non-cash assets must recorded as current taxable income | 18.* Donations received in cash or non-cash assets must reflect in "capital surplus" account, resulting in an increase in the shareholders' equity. | 18.* Revenue |
| D: Non-taxable income | 19.Interests on national bonds | 19.Excluded in taxable income | 19. All interests received are earnings. | 19. Recognised as income on a time proportion basis that takes into account the effective yield. |
| | 20. Income tax refund | 20. Non-taxable income | 20.*Under new ASBE, offset current income tax expense and increase net profit when received. | 20.* Government grants are recognised as income over the period necessary to match them with the related costs. [IAS 20.12] |

[38] MOF [1996] No.79, see SAT(2003).
[39] STA[2000] No. 118, see SAT(2003).

| | | | | |
|---|---|---|---|---|
| | 21. Dividends from FIEs<br><br>22. Investment income | 21. Dividends received by FIEs are non-taxable.<br><br>22. Income received from an investee with tax exemption policy is non-taxable income.[39] | 21. Realised as non-operating income<br><br>22. Recognised when investee enterprise has a profit or loss. | 21. Recognised as income when the shareholder's right to receive payment is established.<br>22. Recognised when investee enterprise has a profit or loss (IAS 28.22) |
| E: Tax losses utilised | 23. Tax loss occurred | 23. Tax losses incurred previously may be carried forward for a following period of up to 5 years, thereby reducing the corresponding taxable income. | 23. No detail stipulation. But the different treatments on tax loss utilised between accounting and tax rules must disclose on tax return. The amount of tax losses utilised is listed in tax notes. | 23. A deferred tax asset should be recognised for the carryforward of unused tax losses and unused tax credits to the extent that it is probable that future taxable income will be available against which the unused tax losses and unused tax credits can be utilised. [IAS 12 revised]. |
| F: Tax rate differential | 24. Effect of different tax rate for subsidiaries | 24. Income tax is calculated based on independent legal entity. Consolidation is not allowed. | 24. Consolidation required. | 24. Consolidation required [IAS 27]. |
| G: Others | 25.Cost of property, plant and equipment | 25.Generally required to use historical cost | 25. Generally required to use historical cost. Lower of cost and market value under new ASBE. | 25. May use either re-valued amount or historical cost. |
| **Timing differences:** | 26.Depreciation (fixed assets) | 26. Usually, using straight-line method and the residual value not less than 10% of original value. Other methods can be adopted only if approved by STA.[40] | 26. Straight-line with residual value averaging from 3-5% of costs. The requirement of life of assets is similar to tax regulations. Under CAS and new ASBE, the method, | 26.Several methods are allowed, estimated residual value and useful life determined by management |

[40] MOF[1994] No. 3, see MOF(1994b).
[41] SAT[2000]No.84 and [2001] No.89, see SAT(2003).

| | | | | |
|---|---|---|---|---|
| | | (1) For houses and building—not less than 20yrs<br>(2) For trains, ships, machinery and other production equipment—not less than 10yrs<br>(3) For electronic equipment, means of transport other than trains and ships, appliances, tools, furniture, etc.— not less than 5yrs | minimum useful life and scrap value can be determined by management. | |
| | 27.Amortisation (intangible assets) | 27. Straight-line method. Amortise over the shorter of the estimated useful life and the contractual or legal life or, if no stipulated time limit, not more than 10 yrs. | 27.* Amortise the shorter of the estimated useful life and the contractual or legal life or, if no stipulated time limit, not more than 10 yrs. | 27.* Amortise over its estimated useful life, which is presumed to be 20 years or less, subject to an impairment test. |
| | 28.Pre-operating expenses | 28. Amortise not less than 5 yrs. | 28. Deferred until the entity begins operations, capitalised and amortised over 5 yrs. Under new ASBE, charged to expense when incurred. | 28. Charged to expense when incurred |
| | 29. Advertisement fees | 29. Not more than 2% (8% since 2001) of turnover, the excess part can be deducted in the future periods[41]. | 29. Expense to current period. | 29. Expense to current period. |
| | 30. Other items such as prepaid rental, telephone fees, postal fees, interest, etc. | 30. Realised only when incurred. | 30. Accrual basis | 30.Accrual basis |
| | 31. Revenue recognition | 31. Recognised when cash received or proof of charging received. | 31. Recognised when all the conditions are satisfied. (ASBE 85,88) | 31. Recognised when all the conditions are satisfied. (IAS18) |

| | | | | |
|---|---|---|---|---|
| Disclosure requirements | 1. Methods of accounting for income taxes<br>2. Item disclosure | 1. May use either tax-payable or tax-effect accounting.<br>2. BTD must be clearly listed on the tax return for clearing income tax per year. The items on the tax return include: non-deductible items, additional taxable income, tax loss utilised , non-taxable items | 1. May use either tax-payable method or tax-effect accounting.<br>2. BTD is not required to release. Deferred tax assets and liabilities are available in financial statement if tax-effect accounting applied. | 1. Tax-effect accounting is required.<br>2. BTD is required to disclose. The items include: non-taxable income, tax rate differential, non-deductible expenses, share of taxation of associated companies, under/over provision in previous year, tax effect of timing difference not brought to account, effect of tax preferential period, overseas profit tax, tax refund, tax loss utilised, deferred tax and others. |

**Source:**

IASC (2001), Chinese GAAP, Chinese Corporate Income Tax Laws.

China's Generally accepted accounting principles (GAAP) consist of the Accounting Law of the PRC (last revised as of 1 July 2000), Financial Accounting and Reporting Rules for Enterprises (FARR) issued by the State Council in 2000, Accounting Standard for Business Enterprises (ASBE, basic Standard) issued by Ministry of Finance (MOF) in 1993, which serves as the conceptual framework of accounting in China, Chinese Accounting Standards (CAS) issued by MOF in 1997, Accounting System for Business Enterprises (new ASBE) issued by MOF, effective on 1 January 2001, Regulations for presentation and disclosure of information for listed enterprises issued by China Securities Regulatory Commission (CSCR).

China's Corporate Income Tax Laws include: Regulations for Income Tax of the People's Republic of China issued by State Council in 1993, Detailed Rules and Regulations for the Implementation of Income Tax of the People's Republic of China issued by MOF in 1994, The Income tax Law of the People's Republic of China for Enterprises with Foreign Investment and Foreign Enterprises issued by National People's Congress (NPC) in 1991, Detailed Rules and Regulations for the Implementation of Income Tax of the People's Republic of China Concerning Enterprises with Foreign Investment and Foreign Enterprises issued by State Council in 1991, The Tax Administration and Collection Law of the People's Republic of China issued by NPC in 1995, The revised Tax Administration and Collection Law of the People's Republic of China issued by NPC on April 28, 2001, Regulations for detail implementation issued by State Administration of Taxation (SAT) and MOF.

## 5.5 A Comparison of the U.S. BTD and China' BTD

As discussed in Chapter 2, most of the existing BTD research is conducted in the U.S. where the substantial independence of tax reporting laws from accounting principles and sufficient discretion given to managers signifies that BTD can be used to test hypotheses about different reporting incentives. To identify the extent to which the U.S.-sourced hypotheses may apply to China or to develop specific hypotheses in the Chinese context, this section compares the U.S. BTD and China's BTD in terms of its measurement and features in its pattern, direction and composition.

***Measurement of BTD***

In the U.S. empirical studies, three main measurements of BTD are adopted: income-effect BTD, tax-effect BTD and deferred tax expenses (DTE). Income-effect BTD is defined as *book income* less *taxable income* (as reported on tax return). Tax-effect BTD is *federal income tax expenses for books* (as reported on the tax return Schedule M-1) less *taxes declared on the tax return* (Mills 1998). However, given that the tax return is not publicly available and there is limited information contained on the tax return (Manzon and Plesko 2002), numerous empirical studies use financial statements to infer taxable income or tax payable and then draw BTD. Correspondingly, income-effect BTD is *book income* less the *imputed "taxable income"* which equals current federal tax expense divided by the statutory tax rate. Tax-effect BTD is *federal income tax expenses for books* less *income tax payable for books*. However, the measurement of tax-effect BTD in the U.S. can not identify permanent differences. As a result, some studies use DTE as a proxy for BTD (e.g. Phillips *et al.* 2003, Hanlon 2005).

While these measures of BTD are widely used in the U.S. literature, they are not adaptable to the Chinese context. First, unlike the U.S., Chinese enterprise's income tax payable is entirely calculated on the basis of separate legal entity reporting. In China, different legal entities may apply to different statutory income tax rates due to diverse tax incentives as presented in Table 5.2 and 5.3. The income tax payable in a consolidated financial statement is equal to the sum of each entity's income tax payable calculated by individual imputed "taxable income" multiplying its applicable tax rate. However, the detailed information about each consolidated party's income tax payable and imputed "taxable income" are not readily available. Thus, an estimation of taxable income using a ratio of income tax payable to statutory tax rate is biased. This bias is serious when multiple tax rates are applied to different subsidiaries in a consolidated group.

Second, income-effect BTD only reflects the income consequences due to different recognition in income and expenses based on accounting and tax rules, but it cannot reflect the tax consequences resulting from tax rate differential. For example, when a listed firm shifts income to reduce taxes from a high tax rate subsidiary to a low tax rate subsidiary, income-effect BTD cannot capture this tax planning strategy. The reason is that tax-induced income-shifting only influences the overall tax payable but does not generate book and taxable income gap in a consolidated group. Appendix 3 further discusses and illustrates how tax-induced income shifting affects the tax-effect BTD in a Chinese context.

Third, the U.S. style tax-effect BTD or DTE cannot precisely measure China's BTD since they ignore permanent differences. Unfortunately, permanent differences are a main part of China' BTD as illustrated in Table 5.4. More importantly, this omission may lead to the failure in testing of tax-planning hypotheses since many tax shelters are asserted to produce permanent differences (Mills *et al.* 2002). It is

supposed that the empirical evidence can not be captured in the U.S. literature regarding BTD and tax planning is due possibly to the problems with BTD measurement they used.

Given China's institutional context, the taxed-effect BTD differing from that in the U.S. will be adopted in this study. As indicated in Section 5.3.3, the tax-effect BTD is measured by *prima facie income tax expense* (book income multiply applicable tax rate) less *income tax payable.* It can be collected from the tax notes of B-shares listed firms' English financial statements. More importantly, as discussed in Chapter 4, this measure is superior to that usually used in the U.S. BTD literature since it includes both permanent differences and timing differences and avoids some of the potential measurement error in estimation as argued in Hanlon (2003). This provides an empirical possibility to test the theoretical framework of BTD developed in this thesis.

Table 5.4 details the major differences between Chinese income tax laws and Chinese GAAP (called Chinese-GAAP-based BTD) and the differences between Chinese income tax laws and IAS (called IAS-based BTD). As presented, IAS-based BTD is very close to Chinese-GAAP-based BTD. Among 31 major items, only 2 differences arise between Chinese GAAP and IAS. These are the items of donations received (i.e. item 18) and amortisations (i.e. item 27). However, these items do not appear to have substantial impact on total BTD due to their small proportions.[42] Given that Chinese-GAAP-based BTD is unavailable since it is not required to release in B-shares firms' Chinese-version financial reports and A-shares listed firms' accounting reports, this study uses IAS-based BTD as a proxy for Chinese-GAAP-based BTD,

[42] Income tax refund (i.e. item 20) hasn't substantial impact on BTD. On the surface, the regulation of income tax refund differs between IAS and Chinese GAAP. The former prescribes that income tax refund increases book income but not affects taxable income while the latter prescribes that income tax refund reduces tax liability but not affects prima facie book income. Actually, these regulations lead to the same amount of BTD in terms of income-effect and tax-effect BTD.

assuming the differences between IAS and tax laws approximate to the differences between Chinese GAAP and tax laws.[43]

***Features of BTD***

Three different features of the U.S. and China's BTD are analysed, including pattern, sign and composition of BTD. An growing trend in the U.S. BTD in 1990s was reported by the U.S. academic studies (e.g. Manzon and Plesko 2002, Mills *et al.* 2002).[44] In their studies, a smooth, progressive growth in book income over tax income was exhibited, suggesting the growing use of tax shelter activities because a relatively small set of institutional and economic variables could be used to explain this increase. But so far, no empirical study has been able to support this hypothesis. Plesko (2004) extends these studies and reports a dramatic decline and a negative aggregate BTD in 2001. He interprets the growth in BTD during 1990s as the behaviour of corporation approaching to tax planning and the negative aggregate BTD in 2001 as accounting conservatism.

Comparatively, the pattern of China's BTD is more irregular. Using the balanced panel data of 76 B-shares listed firms during 1999-2004, Figure 5.4 presents a fluctuating pattern in the aggregate BTD (unscaled tax-effect BTD) during the observation period.[45]

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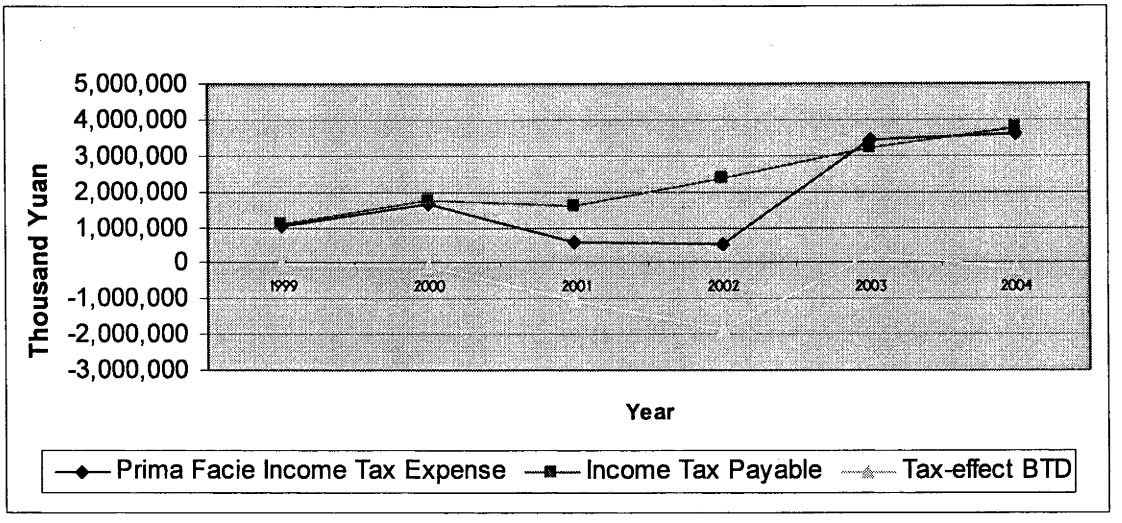
[43] According to the countries survey provided in GAAP 2001, 62 countries are ranked based on the number of differences between their national GAAP and IAS on 80 accounting measures and disclosure. The finding addresses there are only 26 total differences between Chinese GAAP and IAS, implying a close conformity to IAS (Street 2002, Huang 2003). Comparatively, the U.S. has 22, Canada has 25 and Australia has 28 of total differences. This study does not assume that Chinese GAAP is completely aligned with IAS. It only assumes that Chinese GAAP approximates to IAS in terms of some regulations those distinguish with Chinese income tax laws.

[44] They presented that the U.S. aggregate BTD increased from less than $10 billion to over $150 billon over the 1991 to 1998 period.

[45] The choice of observation period 1999-2004 is because most B-shares firms did not disclosure their English reports before 1998, though the disclosure of both Chinese and English-version annual financial reports on a designated website by April 30 of the following fiscal year is a requirement set by the CSRC.

As shown in Figure 5.4, income tax payable (i.e. tax-effect taxable income) exhibits a stable growth while prima facie income tax expense (i.e. tax-effect book income) shows a fluctuating trend. The amount of income tax payable slightly exceeds the amount of prima facie income tax expense in 1999 and 2000. The gap dramatically rise in 2001 and 2002 and thereby yielding a large amount of negative BTD. This can be attributed to the significant changes in accounting and tax rules. For example, the issuance of Accounting Standards for Business Enterprises (ASBE) in 2001 provides more discretion in accounting choices and hence raises substantial variation in BTD. The gap is narrowed remarkably in 2003 and BTD become positive. After 2003, BTD turns negative. This may be partly explained by the implementation of the abolishment of tax refund policy in 2002 that leads to a reduction in the gap and a large amount of tax loss utilised and tax preference occur in 2003 reduce income tax payable as shown in Table 5.5.[46] However, these institutional factors do not appear to entirely explain the fluctuations in BTD. In addition, the economic factors can not justify this variation as well because the tax-effect taxable income does not increase (decrease) with the growing (depressive) tax-effect book income, suggesting the existence of tax management and earnings management.

**Figure 5.4**
**The Aggregate Tax-Effect BTD from 1999-2004**
**(With balanced panel data, total 456 firm-year observations)**

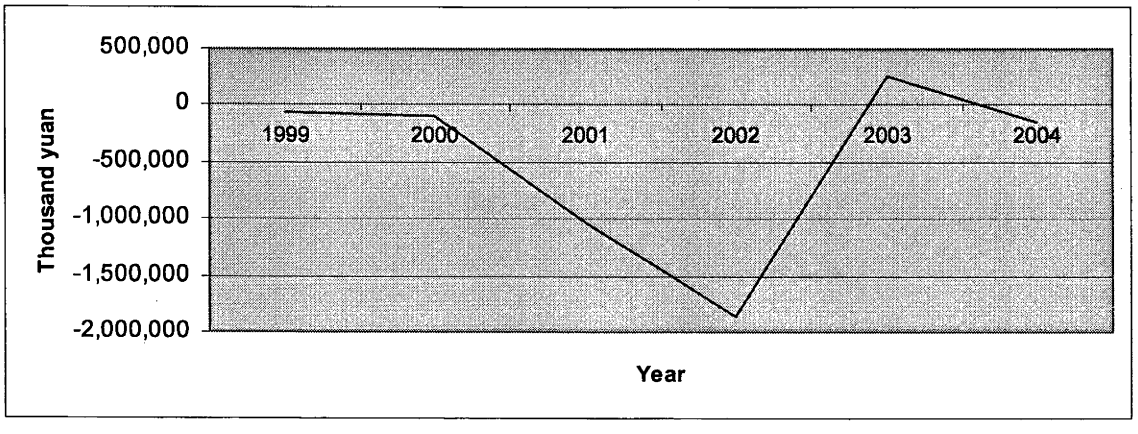



[46] As discussed in Chapter 6, the changed regulations may take at least one year to implement and so there is a time lag.

Another critical distinction between the U.S. and China's BTD is the sign of BTD. The U.S. aggregate BTD is generally positive due to the overwhelming effect of rapid tax depreciation.[47] In contrast, China's aggregate BTD is generally negative. As shown in Figure 5.4, the tax-effect taxable income increases continuously and is mostly higher than tax-effect book income, indicating that the Chinese tax laws tend to be more creative in terms of the income recognition and more stringent in the expenses recognition relative to the Chinese GAAP. For example, an earlier income recognition for tax purposes, the amount limitations in salary, advertisement fees, entertainment fees, less tax depreciation than book depreciation, more non-deductible items such as provision for impairment of assets, expenses without authorised invoice supporting.

Finally, the composition of BTD is quite different from that in the U.S. context. The permanent differences are obviously dominated over timing differences. It might be explained by more strict restrictions and unreversed policy disparity in China's income tax laws, or more tax sheltering activities. As shown in Figures 5.5 and 5.6, the pattern of BTD is determined by the permanent differences. Detailed items and quantity of permanent differences and timing differences are identified as in Table 5.5.

**Figure 5.5**
**The Trend of Aggregate BTD**
**(With balanced panel data, 456 firm-year observations)**




[47] Plesko (2004) also reports a negative aggregate U.S. BTD after the event of 9.11 in 2001.

**Figure 5.6**
**The Comparison of Permanent Differences and Timing Differences**
**(With balanced panel data, 456 firm-year observations)**

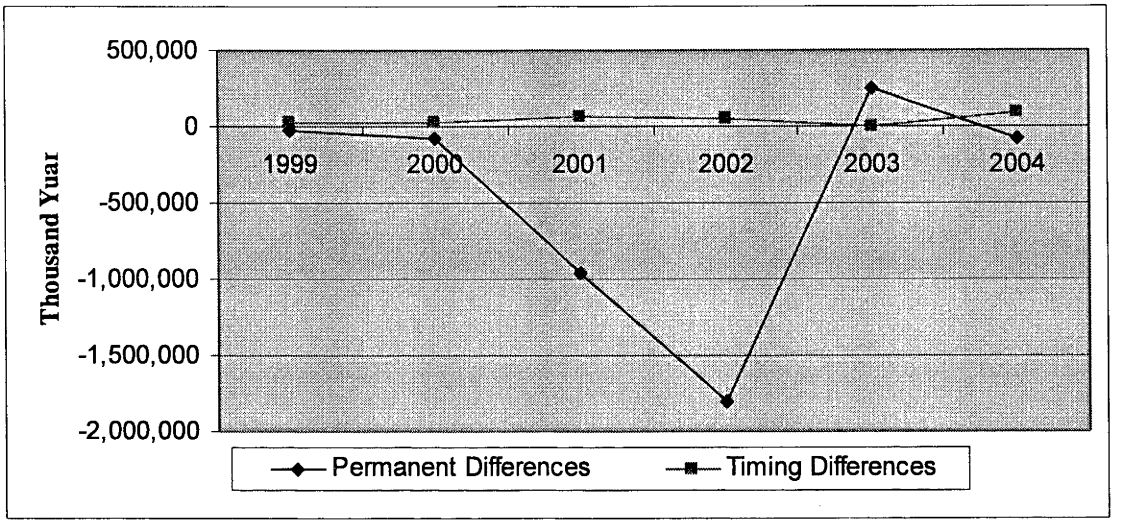



Table 5.5 further indicates the quantity of China's tax-effect BTD and its composition from 1999 to 2004. Permanent differences explain about 91% of total BTD while timing differences only have a small proportion. Especially, TD only represents 1.7% of total BTD in 2003. However, in 2004, it contributes to 52.8% of total BTD. While there are no specific regulations issued, this growth appears to be doubtful. Among permanent differences, the items of "Tax effect of TD not brought to account", "Effect of tax preferential period", "Non-taxable income and non-deductible expenses" have high percentages. Table 5.5 presents that a positive BTD in 2003 mainly due to a large amount of tax loss utilised and tax preference (a negative PD). However, the fluctuations of other items, such as "the effect of tax rate differential", "non-deductible expenses" and "under-provision in prior year", remain open.

**Table 5.5**
**China's BTD and Its Composition (with balanced panel data, 76 listed firms)**

| | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | Total | Percentage |
|---|---|---|---|---|---|---|---|---|
| **Permanent Differences:** | 29,901 | 80,692 | 955,084 | 1,808,280 | -259,261 | 76,338 | 2,691,034 | -91% |
| (+)Effect of tax rate differential | 202,720 | 316,967 | 185,261 | 25,421 | 142,619 | -96,866 | 776,123 | 29% |
| (+) Share of taxation associated companies | 55,341 | 90,418 | 73,326.35 | 89,996 | 113,803 | 199,563 | 622,446 | 23% |
| (+) Non-deductible expenses | 88,376 | 233,644 | 185,139 | 340,601 | 490,807 | 451,213 | 1,789,780 | 67% |
| (+) Under/over provision in relation to prior year | -1,475 | -13,922 | 17,626 | 1,611 | 42,777 | 25,281 | 71,898 | 3% |
| (+) Tax effect of TD not brought to account | 230,325 | 249,989 | 1,296,166 | 2,287,483 | 391,944 | 479,105 | 4,935,012 | 183% |
| (+) Overseas profits tax | 351 | 1,196 | 1,243 | 1,403 | 3,764 | 5,330 | 13,286 | 0% |
| (+) Others | 48,590 | -62,620 | -114,196 | -386,626 | -37,834 | -22,955 | -575,641 | -21% |
| (-) Effect of tax preferential period | 274,148 | 285,368 | 223,187 | 287,658 | 543,149 | 555,649 | 2,169,159 | -81% |
| (-) Effect of tax losses utilised | 32,095 | 47,488 | 47,443 | 59,012 | 696,125 | 92,137 | 974,300 | -36% |
| (-) Non-taxable income | 102,025 | 132,361 | 179,360 | 173,321 | 167,866 | 316,360 | 1,071,293 | -40% |
| (-) Tax refund | 186,059 | 269,763 | 239,492 | 31,618 | 0 | 187 | 727,119 | -27% |
| **Timing differences:** | | | | | | | | |
| Change in deferred taxes | 28,291 | 20,738 | 69,086 | 47,032 | 4,428 | 85,558 | 255,133 | -9% |
| **Tax-effect BTD** (thousand yuan) | -58,193 | -101,430 | -1,024,170 | -1,855,312 | 254,803 | -161,896 | -2,946,198 | 100% |
| Observations | 76 | 76 | 76 | 76 | 76 | 76 | 456 | |

Source: Chinese B-shares list firms' English-version financial reports

## 5.6 Summary

This chapter analyses the development of China's BTD in the last 25 years by reviewing the structural changes in China's accounting and tax systems. The institutional arrangements as illustrated in Table 5.4 create novel institutional features and allow substantial variation in BTD. China's emerging capital market and unique financial reporting requirements provide data availability and empirical opportunity to test the theoretical framework developed in this thesis. To identify the extent to which U.S.-sourced hypotheses may apply to China, this chapter compares the U.S. and China's BTD in terms of its measurement and features. China's BTD is more complicated than the U.S. BTD. In the U.S., economic and structural factors do not adequately explain the excess and smooth growth of *positive* aggregate BTD. China's aggregate BTD is *negative*, dominated by permanent differences and with large fluctuations during 1999-2004. Accounting and tax reforms in China are partly related to these fluctuations. However, possible omitted variables such as those associated with management manipulations remain unexplored.

The U.S. literature suggests that pervasive earnings management and tax sheltering activities mean that BTD may reflect either aggressive income reporting or aggressive tax reporting, additional to any variation in BTD necessarily arising from differences in GAAP and tax laws. In China, despite a short history of BTD, unique institutional settings produce much greater variation in BTD. The empirical evidence demonstrates that earnings management is rampant in the emerging capital market (a detailed analysis is presented in Chapter 6). Anecdotal evidence indicates tax planning is easily undertaken in China, although tax-planning activities have not been systematically documented. Indeed, existing problems in China's current accounting and taxation systems, including inadequate monitoring of management discretion, lack

of independence of accountant and auditors, arbitrariness, complexity and uncertainty of tax laws, may provide managers with considerable discretion and opportunities to practise prevalent earnings management and tax panning. These circumstances and managerial practice may generate enough variation in China's BTD to test hypotheses associated with opportunistic reporting specific to the Chinese context. These are developed in Chapter 6.

# CHAPTER SIX

# HYPOTHESES DEVELOPMENT

## 6.1 Introduction

This chapter develops EM, TM and value relevance hypotheses specific to the Chinese context. The theoretical framework in Chapter 4 identifies BTD as a function of the divergence between accounting rules and income tax laws, EM and TM. It suggests that BTD may be an appropriate measure of EM and TM after controlling for accounting-tax misalignment. This information embedded in BTD is expected to be useful for investors to assess share values in terms of institutional arrangements and earnings quality.

To test this framework, this study first decomposes BTD into normal and abnormal components. NBTD refers to the mechanical differences due to accounting-tax misalignment while ABTD is a result of managerial manipulations in book and tax reporting. This chapter develops some testable hypotheses that firms with strong incentives for EM and TM have high levels of ABTD. If these hypotheses are supported, it may justifiably conclude that ABTD is indicative of potential EM and TM. Correspondingly, the size of ABTD proxy may predict the extent of management manipulations. Given that the focus of this study is to test the magnitude (level) of manipulations rather than their directions, absolute value of ABTD is applied.[48] This

[48] Because EM and TM may raise negative or positive book income and taxable income as shown in Figure 4.1, signed ABTD reflects the both directions and size of manipulations. However, it is hard to compare the extent of manipulations based on signed ABTD. It is argued that using the natural value of ABTD to predict the degree of management manipulation may be misleading. This is because a firm with positive ABTD does not imply that its extent of manipulation is larger than that with a negative ABTD. For example, firm A inflates its book income 200 yuan and taxable income 100 yuan, leading to 100

chapter also constitutes the hypothesis that BTD is relevant for equity valuation based on market practice in China's capital markets and the inference in Chapter 4.

This chapter is organised as follows: Section 6.2 forms tax planning hypotheses in terms of the determinants of tax planning. Section 6.3 develops earnings management hypotheses based on managerial incentives. Section 6.4 develops the value relevance hypothesis of BTD based on an overview of value relevance research in China. Section 6.5 concludes.

## 6.2 Tax Management Hypotheses

To develop the hypotheses with respect to ABTD and tax planning, some specific literature is integrated into this section. The U.S.-based tax planning literature suggests that the significant components affecting tax management include corporate tax rate (Klassen and Shackelford 1998, Klassen *et al.* 1993, Gupta and Mills 2002), non-tax costs consideration (Scholes *et al.* 2002), different tax treatment or jurisdictions (Jackson and Milliron 1986, Klassen and Shackelford 1998) and net operating losses carryforward (Manzon and Plesko 2002, Erickson *et al.* 2004). Building on this literature, this section develops TM hypotheses with respect to the impact of the determinants of tax management on ABTD in a Chinese context.

### 6.2.1 Tax Burden and Tax-Rate Differences

Higher corporate tax rate (tax burden) implies lower post-tax performance and less competitive advantage because income tax negatively affects a firm's post-tax returns and cash inflows. As a result, firms always attempt to achieve tax burden as

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ABTD. Firm B reduces its book income 400 yuan and its taxable income 200 yuan, thereby yielding -200 ABTD. In this case, the degree of manipulation for firm B is larger than firm A. however, a completely different conclusion will be drawn when we compare firms' ABTD based on the number of 100 and -200.

low as possible. The U.S.-based studies have demonstrated that firms respond to the state corporate income tax (e.g. Petroni and Shackelford 1999, Scholes *et al.* 2002) including the variation in tax regulations, tax bases and deductions (e.g. Klassen and Shackelford 1998, Klassen *et al.* 1993, Gupta and Mills 2002, Hofmann 2002). Firms' responses include the inter-period and inter-firms income shifting, change of accounting methods, choice of organisational form and firm location, indicating that corporate tax rate is an important determinant of tax planning.

A major feature of China's corporate income tax is a varying tax burden across industries and firms. As shown in Tables 5.2 and 5.3, the applicable income tax rate (ATR) for Chinese listed firms ranges from 0% to 33%, depending on the status of the business, the established location and the kind of business activity. This is because China's tax regime provides generous tax incentives to stimulate economic development. However, these tax-rate differences also stimulate firms with higher tax rates to take an aggressive tax position. Chan and Mo (2000) investigate whether tax-rate differentials affect corporate tax avoidance behaviour in China. They find that firms with a high tax rate are less compliant, leading to high tax audit adjustments.[49] Thus, it is hypothesised that a higher applicable tax rate creates incentives for firms to engage in tax planning, resulting in a larger ABTD.[50]

**H1:** There is a positive association between ABTD and applicable tax rate.

### 6.2.2 Non-Tax Costs Consideration and Different Tax Treatment

Non-tax costs consideration is a significant factor in tax planning because most tax-reducing strategies decrease financial earnings. However, what firms pursue is the

[49] Chan and Mo (2000) use tax audit adjustments as a measure of tax non-compliance without differentiating tax avoidance and evasion. Thus, tax planning is partly responsible for high tax audit adjustments.

[50] The applicable tax rate used in this hypothesis refers to the tax rate applied to listed firms per se rather than the tax rate applied to its subsidiaries.

maximisation of post-tax return rather than minimisation of tax liability only (Scholes *et al.* 2002).

Based on non-tax costs consideration, a well-designed shelter could well reduce taxes but not diminish income reported to investors. To achieve this, a firm might choose tax planning strategies such as arranging some types of income, transaction, or situations that are tax-exempted, shifting income from consolidated parties with a high tax bracket to those with a low tax bracket.

Some studies have demonstrated that, if firms have different tax treatment across affiliates, across time, across economic activities, they are more likely to engage in tax planning, especially for income shifting tax strategy. For example, Wilson (1995) indicates that "tax planning opportunities increase as companies operate in more countries, enter new markets, have more cross-state transactions, receive more preferential tax treatment, or change legal structures because of mergers and acquisitions, joint ventures, dispositions or restructurings." Klassen and Shackelford (1998) develop an income-shifting model within different jurisdictions based on a simple premise, where total tax revenue collected by a state or a province is proposed to be a linear function of income tax rates in the absence of income shifting. By examining aggregated American state and Canadian provincial data from 1983-1991, they find that corporate income tax revenue is a concave function of corporate income tax rates, consistent with firms shifting their tax-base income to more favourable taxed jurisdictions.

Mills *et al.* (1998) argue that inter-jurisdictional income shifting can create significant tax savings because the variation in tax rates across tax jurisdictions can make firms strategically arrange operations, capital and product flows in a manner to

shift income from a high tax bracket to a low tax bracket. In contrast, firms that operate in one tax jurisdiction do not have this opportunity to pursue these potential tax strategies. Consistently, Gupta and Mills (2002) find that corporations doing business in multiple states (regions) with different tax treatment have more incentives and opportunities for tax planning. More importantly, Jacob (1996) documents that large differences in tax rates between intra-firms provide greater possibility for transfer pricing.

Taken together, non-tax costs consideration makes firms favour the strategies those reduce taxes without affecting reported income, such as income-shifting among affiliates. More importantly, obtaining diverse tax rates provides an opportunity and makes this strategy possible.

In China, the institutional setting provides opportunities and incentives for within-jurisdiction income shifting tax strategies. First, Chinese companies with affiliates in different regions and industries are commonly subject to multiple tax rates. This makes income shifting among subsidiaries easier and cheaper than cross-jurisdiction shifting is for multinationals.

Second, Chinese tax laws prescribe a compulsory use of separate legal entity tax reporting, in contrast to the consolidated accounting requirements in IAS and Chinese GAAP.[51] Thus, consolidated groups can reduce their total tax burden by shifting income among affiliates without affecting aggregate reported book income. Mantzke (2001) finds that the use of separate entity reporting is negatively associated with corporate state income taxes, indicating that separate entity reporting can be exploited to reduce overall tax burden.

[51] See Table 5.4.

Third, high concentration on ownership makes an income shifting tax strategy feasible and less costly. As discussed in Chapter 5, most Chinese listed firms were transformed from SOE. The local government remains a majority ownership of the Chinese listed firms. The direct control causes the related party transaction in a group is easily undertaken in China than elsewhere (Jian and Wong 2003). Using a sample of 131 Chinese listed firms in the basic materials industries, Jian and Wong (2003) find that firms controlled by a corporate group engage in more related party transactions than firms those are not. They report abnormally high levels of related party sales, mainly to the controlling shareholders and other member firms in the group.

Therefore, like keiretsu companies in Japan (Gramlich *et al.* 2004), China's listed firms have strong incentives to save overall taxes by shifting income from affiliates with a high tax rate or tax disincentives to those with a low tax rate or tax incentives, presumably by using non-market value transferring prices. This tax planning strategy is easily undertaken especially when diverse tax treatment exists in a consolidated group. Thus, it is hypothesised that firms with more tax rates are more likely to engage in tax-induced income shifting, thereby giving rise to larger ABTD.

**H2:** There is a positive association between ABTD and number of tax rates.

In China, tax holidays are one of typical tax preference. When a separate entity has tax holidays, it is less likely to avoid tax. However, tax-rate differences arising from tax holidays will stimulate tax-induced income-shifting within a consolidating group to maximise the benefit of tax holidays. Therefore, it is predicted that firms with a consolidated affiliate in tax holidays have higher ABTD.

**H3**: Firms with a consolidated party in tax holidays have larger ABTD than do their counterparts.

### 6.2.3 Tax Loss Utilised (NOL Carryforward)

Net operating loss (tax loss) and NOL carryforward (tax loss utilised) are two different concepts in the countries that allow tax losses to be carried forward. A firm with a tax loss means it has negative taxable income (or its total expenses are more than total income for taxation purposes).[52] A firm with tax loss utilised implies that it has a positive taxable income but it can claim tax exemption from prior tax loss reserves.

Tax loss utilised is a benefit offered by government (tax offices) to reduce a firm's investment and operation risks and increase its survival ability. A firm with tax loss utilised can gain interests from tax exemption in response to part or entire of authorised previous loss, implying that the increasing taxable income in the year of tax loss utilised does not raise the parallel growth in income tax payment.[53] Some literature suggests that tax loss utilised (NOL carryforward) can be used to avoid paying taxes in response to the increasing income (Manzon and Plesko 2002, Erickson *et al.* 2004). In addition, tax loss utilised has time value due to the existence of capital cost. The sooner tax loss is utilised, the greater return of tax loss recoupment a firm gets.

Consequently, listed firms with tax loss utilised have strong incentive to shift other consolidated parties' income into their account to reduce total tax burden or to shift income from the future periods to the current period in order to get a higher return of tax loss recoupment.

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[52] A business can incur a loss for tax purposes but a profit for accounting purposes. Hence, a tax loss is distinguished from an accounting loss.

[53] Unlike the U.S, Chinese tax laws disallow tax loss be carried back but allow tax loss be carried forward in the following five years. The amount of tax loss utilised depends on the evaluation from tax authorities instead of the net operating loss represented in financial reports. The approved tax loss is not publicly available but tax loss utilised is observable. Tax loss utilised indicates the amount of tax loss carried forward in current year based on an approved tax loss reserve.

**H4**: Firms with tax loss utilised have larger ABTD than do firms without tax loss utilised.

## 6.3 Earnings Management Hypotheses

Earnings management incentives, such as accounting-based contracts and market expectations, typically presented in much of the Western literature, are relatively weak in the Chinese context (Aharony *et al.* 2000, Cai *et al.* 2003).[54] Instead, the primary incentives for EM in China are mainly subject to meeting regulatory requirements and the interests of local governments and parent-State-Owned Enterprises (SOE), as elaborated below. This section attempts to develop the earnings management hypotheses based on these specific incentives.

### 6.3.1 Seasoned Equity Offering Incentives

The seasoned equity offering (SEO) research in the developed countries demonstrates that SEO-issuing firms report income-increasing discretionary accruals around the time of equity offerings (e.g. Teoh *et al.* 1998, Marquardt and Wiedman 2004). Similarly, a growing body of literature in China (mostly in Chinese) shows that listed firms inflate earnings to meet the threshold for getting the eligibility of SEO. This can be explained by Chinese listed firms' heavy reliance on equity financing (e.g. Yan *et al.* 2001, Huang and Zhang 2001, Liu *et al.* 2004), insufficient initial public offering (IPO) quota offered by government (Aharony *et al.* 2000) and the high threshold of SEO set by the CSRC (Chen 1998, Chen *et al.* 2000).

Contrary to the pecking order theory in the U.S. where debt financing is superior to equity financing, the Chinese listed firms have strong propensity and reliance on

[54] See Cai et al. (2003) for a comprehensive discussion.

equity financing (e.g. Yan *et al.* 2001, Liu *et al.* 2004, Huang and Zhang 2001). This can be explained by several factors:

(1) Equity financing has relatively lower cost than debt financing in China. For instance, the average unit cost of equity financing is about 2.42%. In contrast, the annual bank loan interest rate is 5.85% for one year, 5.94% for three years, and 6.03% for five years. The annual interest rate of corporate bond is 3.78% for three years and 4.032% for five years (Huang and Zhang 2001);

(2) Equity financing has less pressure in fixed return time and less risk in bankruptcy. The listed firms are allowed more flexibility in capital application as the capital raised by debt financing is usually specified;

(3) Debt financing market in China is neither well developed nor efficient. The high threshold set by the CSRC, the complicated and opaque approving procedure increase its difficulty and constraints (Liu and Lu 2003);

(4) The investors lack interests in bonds due to its poor credibility (Su 2003).

As a result, being listed implies holding a right to access equity financing to raise capital at a low cost in China. However, the competition is fierce since the approval of listing not only relies on the firm's performance, but also relies on annual IPO quota and the government's balance of the interests among different industries and geographic regions.[55] For example, in 1993, the quota for B-shares was 800 million shares. There were hundreds of SOE applicants but only 24 B-shares IPO were approved (Aharony *et al.* 2000). Due to many firms competing for the limited IPO quota, the local governments usually allocate these shares to as many firms as possible, making the quota assigned to each firm too small to meet its capital needs. Thus, firms endeavor to issue additional shares by SEO to reach a higher level of capitalization to meet their operating requirements after IPO.

[55] A major listing requirement by the CSRC for IPO is at least two consecutive years of operating profit. B-shares and H-shares firms are also required to generate enough foreign exchange income for the purpose of dividend payment in the future.

Yan *et al.* (2001) examine a sample of 143 A-shares listed firms that satisfy the threshold of issue rights from 1998 to 2000. They find that only 10% listed firms forgo the application of rights issues, reflecting a strong propensity of equity refinancing. To curb the excessive rights offering, the CSRC modifies a strict threshold for SEO (see Table 6.1 and 6.2).

**Table 6.1**
**The Regulations on Rights Issuing by Chinese Securities Regulatory Commission**

| Date of Issuance and Documents | Profit and ROE Requirements | Number Limitation on New Shares |
|---|---|---|
| **Nov. 17,1993 CSRC [1993]128** | Two year's profits | 30% of existing shares |
| **Sep. 30, 1994 CSRC[1994]131** | three-year average ROE $\geq$ 10%[56] | No change |
| **Jan. 24,1996 CSRC[1996]17** | ROE $\geq$ 10% in each of previous three years[57] | 30% of existing shares, excluding shares issued as stock dividends |
| **Mar. 17,1999 CSRC[1999]12** | three-year average ROE $\geq$ 10%[58], and ROE $\geq$ 6% in each of previous three years | No change |
| **Mar. 15, 2001 CSRC[2001]43** | three-year average ROE $\geq$ 6% | No change |

Source: http://www.csrc.com.cn

**Table 6.2**
**The Regulations on Public Offering by Chinese Securities Regulatory Commission**

| Date of Issuance and Documents | Profit and ROE Requirements |
|---|---|
| **Feb. 24,1998 (B-shares) CSRC[1998]5** | **three-year concessive profits** |
| **Mar. 15, 2001 CSRC[2001]43** | **three-year average ROE $\geq$ 6%** |

Source: http://www.csrc.com.cn

[56] If establishment is less than three years, it can use the actual fiscal year.
[57] For firms in the energy, raw materials, and infrastructure sectors, ROE should not be below 9% in each of the previous years.
[58] For firms in the energy, raw materials, and infrastructure, agriculture, and high-tech sectors, the average ROE should not be below 9% in each of the previous years.

As shown in Tables 6.1 and 6.2, return of equity (ROE) is an important threshold set by the CSRC to gain the rights of SEO. To meet this threshold, China's listed firms have strong incentive for managing their earnings. For example, Chen (1998) indicates that firms with ROE slightly above 10 percent have unusual increases in accounts receivable. By examining the frequency distribution of ROE around the rights offering threshold (i.e. 10% ROE), Haw *et al.* (1998b) and Chen *et al.* (2000) find that firms with ROE in the range of 10 to 11 percent have unusually high discretionary items, such as abnormal accruals and non-core profits. Consistently, Jian and Wong (2003) provide evidence that China's listed firms use recurring related party transactions to manage operating earnings in order to meet government requirements of new equity offerings.

Thus, it is hypothesised that potential seasoned-equity-offering issuing firms face an immediate incentive to improve profitability to get the eligibility of SEO.

**H5**: Ceteris paribus, the magnitude of ABTD for firms issuing seasoned equity offering in the next year is larger than that for their counterparts.

### 6.3.2 Avoid Delisting and Trading Restrictions Incentives

While numerous literature has shown that avoiding loss is a strong stimuli for earnings management (e.g. Burgstahler and Dichev 1997), China's listed firms exhibit an even stronger motivation to report positive earnings because of the CSRC's delisting and trading restrictions regulations.

In order to protect minority shareholders and to encourage better corporate governance, the CSRC issued the Special Treatment (ST) regulation in 1998, in which listed firms with two successive years of loss or with net asset per share less than face value of the security would be specially treated on the stock exchanges. The Special

Treatment means that the stocks are traded with a ± 5% price change limit each day versus ±10% for normal stocks. The special treatment firms' midterm reports must be audited. If Special Treatment firms continue to suffer a loss for one more year, they will be classified as the "particular transfer" (PT) firms. The price increases in a particular transfer firm cannot be more than 5% for any trading days to prevent insider manipulation. However, the price of a particular transfer share is allowed to fall without limit. The particular transfer shares can only be traded on Fridays. As well, the particular transfer firms will be de-listed if they cannot become profitable within one year, meaning they will lose the ability to raise capital from the stock market.[59] For the controlling shareholders and other insiders, being a Particular Transfer firm and being de-listed afterwards implies losing private control benefits and future rent-seeking opportunities.

As a result, firms are keen to avoid reporting book losses (Chen *et al.* 2003, Haw *et al.* 1998b and Jian and Wong 2003). Lu (1999) investigates how loss firms manipulate earnings and finds that loss firms exhibit substantially increasing discretionary accruals before and after the first loss-making year to avoid loss and Special Treatment. In contrast, firms report decreasing discretionary accruals in the year of first loss, consistent with the literature of taking a big bath.

Accordingly, it is hypothesised that, in attempts to avoid Special Treatment or delisting, firms in the first loss year are likely to take a big bath while firms with a preceding year loss or with two consecutive losses have strong incentives for boosting earnings to avoid consecutive losses, thereby giving rise to larger ABTD. It gives:

[59] PT regulation took into effect from 1999 and voided in 2001. New regulation shows that firms with consecutive three-year losses should be suspended until it becomes profitable and be delisted if it shows a loss in the first midterm reports in the fourth year.(see http://www.csrs.com.cn). After December 2001, firms with three concessive losses will be delisted directly.

**H6a**: Ceteris paribus, the magnitude of ABTD for firms with the first loss at year t is larger than that for other firms.

**H6b**: Ceteris paribus, the magnitude of ABTD for firms with the preceding loss at year t-1 is larger than that for other firms.

**H6c**: Ceteris paribus, the magnitude of ABTD for firms with two consecutive losses at year t-2 and t-1 is larger than that for other firms.

### 6.3.3 Local Government and Parent-Stated-Owned-Enterprise Incentives

A major characteristic of the Chinese capital markets is that share ownership is highly concentrated in the hands of the governments. The local governments owned about 85% of A-shares listed companies during 1993 to 2000 (Chen *et al.* 2003). For B-shares firms, 80 out of 110 B-shares firms' first shareholder is State (CSRC 2005). As indicated in Chapter 5, essentially most listed firms are transformed from stated-owned-enterprises (SOE). SOE still remains a close personnel and economic links with listed firms after their IPO. These factors lead to the local government and the parent-SOE exert a large extent of control over and intervention in the Chinese listed firms.

From the perspectives of the local government, it desires to attract more investment to develop the local economy, increase employment opportunities and create much regional revenue. This is because the performance of a local economy directly affects the political future of the head of local government. Holding as more listed firms as possible in its jurisdiction implies more advantages for economic development. Therefore, the local government actively assists listed firms in boosting their earnings for meeting the threshold of SEO or avoiding delisting by providing them with fiscal transfers (Chen *et al.* 2003).[60] The evidence shows that 21% SEO-issuing

[60] Fiscal transfers include fiscal subsidies and tax rebates. See Chen et al. (2003) for a more explanation.

firms are unqualified before receiving fiscal transfers and 96% firms with slight loss become profitable after getting fiscal transfers.

From the perspective of top management, due to most of them being appointed by the local government and their parent-SOE rather than shareholder committees, their tenure and promotion heavily rely on their performance as perceived by the local government. Therefore, managers are keen to satisfy and please the largest shareholder, but seldom consider minority shareholders' interests (DeFond *et al.* 2000, Aharony *et al.* 2000). By examining firms with the CSRC allegations of accounting manipulation during 1994 to 2002, Liu and Du (2003) demonstrate that firms whose largest shareholder is State are more likely to manage earnings. It gives:

**H7**: Ceteris paribus, the magnitude of ABTD for firms whose largest shareholder is State is larger than other firms.

## 6.4 Value Relevance Hypothesis

Most market-based value-relevance literature is conducted in a mature market, such as the U.S. To develop the testable hypothesis concerning the value relevance of BTD in a Chinese setting, whether the inference built on the literature in a mature market can apply to China's emerging capital market appears to be an important issue. This section reviews the value relevance research in China in terms of the value relevance of accounting information and remained concern, followed with a hypothesis development.

### 6.4.1 Overview of Value Relevance Research in China

Despite the young age of the market, an immature accounting environment, insufficient supporting infrastructure and the perception that investors are irrational and

unsophisticated, considerable literature has documented that accounting information is value relevant in China's stock market. Based on a sample of all A-shares listed firms in the period from 1990 to 1997, Chen *et al.* (2001) indicate that both earnings and book value based on the Chinese GAAP are value-relevant in the A-shares market under the price and return model. Eccher and Healy (2000) find that earnings and accruals based on the Chinese GAAP and IAS are highly correlated with stock returns for both A-shares and B-shares firms. Further, Bao and Chow (1999) demonstrate that earnings and book value reported based on IAS have greater information content than those based on the Chinese GAAP. Sami and Haiyan (2004) provide evidence that the information in the B-shares market is more value relevant than that in the A-shares market due to dual reporting and auditing systems (Chapter 5 presents a detailed explanation about dual reporting and auditing systems).

Using a sample of 1516 A-shares firm-years for 1995-1998, Haw *et al.* (2001) investigate the relative and incremental information content of earnings, operating cash flows and accruals. They find that earnings have greater persistence and predictability than operating cash flows. Accruals have more information content over operating cash flows, consistent with the literature as in the mature markets. Though discretionary accruals provide incremental information beyond that contained in the nondiscretionary accruals and operating cash flows, they are priced similarly. They interpret this finding as evidence that Chinese investors being functionally fixate on earnings. Zhao and Wang (1999) also find that the market only reacts mechanically to the nominal earnings per share, but can not realise the economic implications of permanent earnings in EPS, implying that there is a "functional fixation" in China's stock markets.

Following Lev and Thiagarajan (1993) and Abarbanell and Bushee (1997), Zhou (2004) investigates the usefulness of fundamental information in firm valuation and

future earnings prediction for China's A-shares listed companies. Building on the notion of predictive and valuation links in the U.S literature, he finds that some accounting indicators of earnings quality, such as accounting receivable, provision for bad debt and operating cash flow have incremental explanatory power to stock returns and future earnings, consistent with prior fundamental analysis literature in the U.S.

While the value relevance of accounting information in the Chinese capital markets has been evidenced, the reliability and quality of earnings information have been questioned due to rampant managerial manipulations (Haw *et al.* 1998a, Abdel-khalik *et al.* 1999, Aharony *et al.* 2000, Eccher and Healy 2000, Shen 2001, Chen *et al.* 2003) and increasing accounting scandals (e.g. YingGuangXia, Sanjiu Medical & Pharmaceutical and QiongMingYuan).

Like the developed capital markets (e.g. the U.S.), the value relevance of accounting information has been impaired and weakened by managerial manipulations. A recent study by Sami and Haiyan (2004) finds that the value relevance of accounting information for B-shares market has decreased since 1998. Comparatively, the level of value relevance in the A-shares market decreased from 1996 to 2000. In particular, the usefulness of earnings has significantly deteriorated over time. Although accounting information has been documented to be relevant for share pricing in China's capital markets, the low quality of accounting information has threatened the implications of value relevance research for the market practice.

Taken together, though China's capital market has a short history and unique context, it practises in a similar way to that in the mature markets. In some settings, the value relevance literature drawn from the U.S. can apply to the Chinese context.

### 6.4.2 Hypothesis Development

As discussed in Chapter 4, BTD is a product of accounting-tax misalignment, tax management and earnings management. Building on the prediction and valuation links, BTD is expected to be useful for investors to assess share values because it contains both policy-related and quality-related information those have implications for the market's estimation of firms' future performance. The policy-related information in NBTD about different income reporting requirements for book and tax purposes may identify some transitory earnings components, thereby aiding the prediction of firms' future tax-related cash flows and future earnings. In particular, the quality-related information in ABTD about managerial manipulations may address the levels of noise in reported earnings and cash flows (e.g. an overstatement or understatement), thereby aiding investors and analysts to precisely evaluate firms' performance and estimate future earnings. It is hypothesised that this predictive information embedded in BTD is reflected in the contemporaneous stock prices.

**H8**: BTD is informative for equity valuation because it reflects the information about the differences between GAAP and tax laws, earnings management and tax management those have implications for the market's estimation of firms' future performance.

## 6.5 Summary

To test the theoretical framework established in this thesis, this chapter integrates specific literature associated with the determinants of and managerial incentives for tax management and earnings management into China's market practice. By utilising the observable tax and earnings management incentives for the Chinese listed firms, this

chapter develops some testable hypotheses from a Chinese context, in which ABTD is predicted to be positively associated with opportunistic reporting incentives and so signifies the managerial manipulations. This chapter also constitutes a hypothesis about the value relevance of BTD based on the review of value relevance literature in China and the inference made in Chapter 4.

# CHAPTER SEVEN

# RESEARCH DESIGN

## 7.1 Introduction

This chapter discusses the research method, model design and variables measurement used for testing the hypotheses developed in Chapter 6. It specifies the data sources and presents the sample selection procedures and data description.

The rest of this chapter is organised as follows. Section 7.2 deals with empirical models design and variables measurement. A linear cross-sectional BTD model is developed to identify *normal* and *abnormal* BTD. NBTD is estimated by regressing reported BTD on investment in fixed and intangible assets, changes in revenue and changes in tax loss position. It is measured by using the estimated coefficients in the fitted equation based on the combination of year and industry portfolios. ABTD is estimated as the residual from the model. A naïve prediction model is introduced to benchmark the performance of the main model.

To examine whether BTD can signal earnings management and tax planning, a multiple regression model is formulated, in which the observable incentives for tax management and earnings management are used to explain the variation in ABTD. This section also discusses the usefulness of the earnings regression model and the return model in testing the value relevance of BTD. Section 7.3 identifies data sources, sample selection and presents descriptive statistics for the sample.

## 7.2 Empirical Design

The cross-sectional and naïve models for estimating *normal* and *abnormal* BTD are described followed with the formulation of a multiple regression model for testing the association between ABTD and EM and TM incentives. The one-year-ahead earnings regression model and return model are developed to test the value relevance of BTD in the Chinese emerging capital market.

### 7.2.1 Estimation of Abnormal BTD

#### *A Linear Cross-Sectional Model for Estimating ABTD*

As discussed in Chapter 4, NBTD is a product of accounting-tax misalignment and may be influenced by four components:

(1) The level of NBTD varies with the changes of economic factors. The increases in revenue may result in a negative NBTD arising from of the different recognition in expenses. For example, the increasing revenue will raise a large number of bad debts deriving from high account receivables. It may also cause more advertisement fees or entertainment fees. These expenses can be determined based on managerial discretion but are conditionally deductible under the Chinese tax laws (See Table 5.4 for some detailed regulations).

(2) The levels of investment in fixed and intangible assets will affect NBTD. For example, a large amount investment in fixed and intangible assets responds to a high *deferred tax expense* due to the large calculation base of depreciation and amortisation, even if financial rules and tax rules are unchanging.[61] Also, the magnitude of

[61] Manzon and Plesko (2002) provide a comprehensive analysis as to factors affecting BTD. However, unlike the U.S., depreciable lives for tax purpose in China are usually longer than those for accounting purpose. Thus, taxable income is higher than book income in the early years of an asset's life and lower in the later years of an asset's life. Assume that in a firm, the depreciable (amortisable) lives for tax purpose and accounting purpose are constant, more PPE (intangible assets), more deferred tax expenses occur. This leads to a higher taxable income than book income.

investment in fixed and intangible assets affects permanent differences because of a large calculation base of provisions for impairment of fixed and intangibles assets. The permanent differences arise because provision for these items is non-deductible under the Chinese tax laws despite it being able to be charged in the account under the accounting standard. This gives rise to a higher taxable income compared to book income. Therefore, investment in fixed and intangible assets may be negatively associated with NBTD.

(3) The changes in GAAP and tax laws from period to period. For example, a new issued regulation for deductible expenses in GAAP or/and tax laws in specific year will affect NBTD.

(4) Tax loss initiation (or NOL) and tax loss utilisation (or NOL carryforward) will raise the variation in NBTD because of different recognition in accounting and tax rules. NBTD will be understated when tax loss occurs and overstated when it is utilised.[62] To avoid the "noise" arising from tax losses, prior studies in tax research usually drop the observations with NOL from the sample (e.g. Klassen *et al.* 1993, Wilkie and Limberg 1993, Gupta and Newberry 1997). However, this removal results in a small sample size and limits the generalisability of findings.

Based on above discussion, NBTD varies over time rather than being constant. It is subject to the investment in fixed and intangible assets, changes in revenue, tax loss position and policy changes. To estimate NBTD, this study develops a cross-sectional expectations model for total BTD to control for the impacts of these factors on NBTD (See equation 7.1 below). The ABTD can be determined by deducting the NBTD from the total BTD.

[62] See Wilkie, P. J. (1992) for a detailed discussion. Also see Appendix 4 for an illustration of the tax loss effects on BTD based on the Chinese tax laws.

Following the spirit in Jones (1991), the variables of investment and changes in revenue are used to control for the effect of changes in the economic circumstances on NBTD. The values of tax loss initiation and utilisation are included to control for tax loss position effects. To control for the structural changes, the cross-sectional estimation is applied. The model is presented as follows:

$$BTD_{it} = \beta_0 + \beta_1 INV_{it} + \beta_2 \Delta REV_{it} + \beta_3 NOL_{it} + \beta_4 TLU_{it} + \varepsilon_{it} \quad (7.1)$$

Where:

$BTD_{it}$: Reported BTD for firm i in year t, deflated by total assets;

$INV_{it}$: The sum of gross property, plant and equipment and intangible assets, proxies for investment scale, deflated by total assets;

$\Delta REV_{it}$: Changes in revenue from year t-1 to year t, proxies for economic growth, deflated by total assets;

$NOL_{it}$: The value of accounting loss, proxies for tax loss, deflated by total assets;[63]

$TLU_{it}$: Reported tax loss utilised for firm i in year t, deflated by total assets;[64]

$t$: The *estimation* period;

$\varepsilon_{it}$: The error term in year t for firm i.

All variables are scaled by total assets for year t to control for firm size.[65] As discussed in this section, a positive relationship between BTD and $TLU_{it}$ and a negative relationship between BTD and $INV_{it}$, $\Delta REV_{it}$ and $NOL_{it}$ are predicted.

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[63] In China, the value of tax loss is calculated by tax office and reflected in a tax clearance form which is not publicly available. It can't be estimated or measured from the annual reports. Here, NOL can be used to proxy for tax loss to capture the effect of initiation of tax loss on BTD is because tax laws treat taxable income and tax loss asymmetrically. When a firm has a tax loss no matter how much the value is, its taxable income is always treated as zero, leading to its tax payable is zero. However, the size of tax expenses is based on the value of NOL and its applicable tax rate. As a result, the value of NOL determines how much BTD is under-evaluated in the initiation of tax loss (also see Appendix 4 for a detailed illustration).

[64] Tax-loss utilised is available in B-shares English financial reports, which indicates the amount of firms' recoupment of previous tax loss in the current year. Using variables of NOL and TLU can reflect the impact of NOL in the year of initiation and reserve on BTD. For firms without NOL or TLU, this study denotes that figure as zero.

NBTD is defined as the fitted value from equation (7.1):

$$NBTD_{it} = \hat{\beta}_0 + \hat{\beta}_1 INV_{it} + \hat{\beta}_2 \Delta REV_{it} + \hat{\beta}_3 NOL_{it} + \hat{\beta}_4 TLU_{it} \quad (7.2)$$

Where $t$ is the *event* period, the firm-specific parameters of $\hat{\beta}_0$, $\hat{\beta}_1$, $\hat{\beta}_2$, $\hat{\beta}_3$ and $\hat{\beta}_4$ are estimated separately for the combination of year and industry portfolios. Each yearly NBTD is obtained from the previous year estimation assuming no ABTD in the last period.

Assuming that ABTD is orthogonal to NBTD, it is estimated as the residual from a regression of total BTD on factors explaining NBTD. From equation (7.2), ABTD is estimated as:

$$ABTD_{it} = BTD_{it} - (\hat{\beta}_0 + \hat{\beta}_1 INV_{it} + \hat{\beta}_2 \Delta REV_{it} + \hat{\beta}_3 NOL_{it} + \hat{\beta}_4 TLU_{it}) \quad (7.3)$$

The cross-sectional estimation is more appropriate than time-series estimation in this study because:

(1) it avoids the survivorship bias and weak representativeness due to long-period data demands of time-series approach, e.g. time-series approach requires at least 10-years data (McNichols 2000, Subramanyam 1996);

(2) it avoids the assumption made in time-series estimation that the parameters are stable across years and hence avoids model misspecification due to the structural changes occurring during a long estimation period;

(3) because the parameters are re-estimated each year, this approach can capture the effects of specific-year changes in GAAP and tax laws on expected BTD, assuming they take at least one year to implement.

[65] Large firms are more likely have large amounts of investment, less change in revenue and a lesser possibility of the presence of NOL.

Because NBTD and ABTD are assumed to be orthogonal, the estimation error in one variable will bias the other. By controlling for the factors attributable to NBTD, e.g. economic circumstances, investment, tax loss position and changes in accounting and tax policies, the noise in ABTD is reduced and the unexplained portion (ABTD) is more likely to be explained by discretionary (opportunistic) factors.

***A Naive Prediction Model for Estimating ABTD***

To benchmark the performance of the cross-sectional regression model, a naïve difference prediction model is used. ABTD is estimated as the difference between the reported BTD in the current year and the reported BTD in the preceding year. All BTD variables are scaled by total assets to control for scale effects.

$$ABTD_t = BTD_t - BTD_{t-1} \qquad (7.4)$$

### 7.2.2 Model for Testing the Association between ABTD and EM and TM Incentives

To test the usefulness of ABTD in indicating managerial manipulations, Chapter 6 develops seven testable hypotheses where firms with strong incentives for TM and EM are expected to have high levels of ABTD.

To test H1-7, a multiple regression model is employed where ABTD is regressed on a set of variables that proxy for various tax management and earnings management incentives. The model is presented as follows:

$$ABTD = \beta_0 + \beta_1 ATR + \beta_2 Number + \beta_3 TAXH + \beta_4 TLU + \beta_5 SEON + \beta_6 SOE + \beta_7 LOSS + \beta_8 LOSS1 + \beta_9 LOSS2 + \beta_{10} Y2001 + \beta_{11} Y2002 + \beta_{12} Y2003 + \varepsilon \qquad (7.5)$$

Where:

ABTD: Absolute value of ABTD;[66]

ATR: Applicable tax rate for the sample listed firm;

Number: The number of different applicable tax rates in a consolidated entity;

TAXH: Dummy variable that equals 1 when a consolidated entity has a member company with a tax holiday, and 0 otherwise;

TLU: Dummy variable that equals 1 when a consolidated entity has tax-loss utilised, and 0 otherwise;

SEON: Dummy variable that equals 1 when a consolidated entity has rights issuing or public offering in the next year, and 0 otherwise;

SOE: Dummy variable that equals 1 when a consolidated entity whose largest shareholder is the State, and 0 otherwise;

LOSS: Dummy variable that equals 1 when a consolidated entity is loss in current year t but not in year t-1, and 0 otherwise;

LOSS1: Dummy variable that equals 1 when a consolidated entity is loss in year t-1 not in year t-2, and 0 otherwise;

LOSS2: Dummy variable that equals 1 when a consolidated entity has losses in both year t-1 and year t-2, and 0 otherwise;

Y2001: Dummy variable that takes 1 when it is in the year 2001, and 0 otherwise;

Y2002: Dummy variable that takes 1 when it is in the year 2002, and 0 otherwise;

Y2003: Dummy variable that takes 1 when it is in the year 2003, and 0 otherwise.

The variables of ATR, Number, TAX and TLU are used to test the hypotheses of tax management (i.e. H1-4) while the variables of SEON, SOE, LOSS, LOSS1 and LOSS2 are used to test the hypotheses about earnings management (i.e. H5-7). As discussed in Chapter 6, H1-7 predict significantly positive coefficients on $\alpha_1$-$\alpha_9$. The year dummies are included to control for time effects on ABTD.

[66] See Chapter 6 for a justification of using absolute value of ABTD.

### 7.2.3 Models for Testing the Value Relevance of BTD

Prior literature utilises various methods to test the value relevance of accounting variables. Most existing studies use stock price or stock returns as an external benchmark to measure value-relevance in accounting variables. Lev and Thiagarajan (1993) and Abarbanell and Bushee (1997) demonstrate that the accounting variables' association with stock returns can be explained by their abilities to predict future earnings. If a variable is informative for evaluating firms' performance and estimating future earnings and this information can be reflected in stock returns, it is value relevant. Following Lev and Thiagarajan (1993) and Abarbanell and Bushee (1997), this study investigates the value relevance of BTD by incorporating the prediction and valuation links. This chapter firstly tests the predictive link by examining whether BTD is informative for future earnings, and then tests the valuation link by investigating the association between BTD and stock returns.

***The One-Year-Ahead Earnings Regression Model***

This study uses the one-year-ahead earnings regression model to examine the predictive ability of BTD with respect to the next year's earnings. The equation is designed as follows:

$$EPS_{t+1} = \beta_0 + \beta_1 EPS_t + \beta_2 BTD_t + \varepsilon_{t+1} \quad (7.6)$$

Where:

$EPS_{t+1}$: Earnings per share in year t+1, scaled by stock price on April 30 following the end of fiscal year t-1; [67]

[67] The Chinese listed firms are required to release their annual reports by April 30 following the fiscal year-end. To assure that the stock price reflects the market reaction to the publication of the annual financial reports, price on April 30 following the fiscal year-end is used.

$EPS_t$: Earnings per share in year t, scaled by stock price on April 30 following the end of fiscal year t-1;

$BTD_t$: Book-tax differences in year t, deflated by total assets.

The current year's earnings is expected to be positively associated with future earnings as in prior literature (e.g. Sloan 1996, Fama and French 2000, Hanlon 2005). In addition, if BTD identifies the "transitory component" of current earnings and reflects a low earnings quality due to management manipulation, large BTD implies that the current earnings are largely transitory and less persistent. One can observe a reversal of earnings in the subsequent period. As a result, future earnings are expected to be negatively associated with BTD.

***The Return Model***

Because the return model is subject to less serious heteroscedasticity and fewer misspecification problems than the price and differenced-price models (e.g. Landsman and Magliolo 1988, Kothari and Zimmerman 1995), a return model is used to test the valuation link between firm value and BTD.[68]

Unlike some event studies that examine the stock prices reaction over short windows around the announcement date, most value-relevance literature performs association studies that investigate whether the accounting numbers of interest explain prices or returns over long windows (Holthausen and Watts 2001). This is because the accounting system recognises events later than security prices do. A regression of returns accumulated over a short window around the announcement of financial reports

[68] Price models are subject to coefficient bias induced by correlated omitted variables, cross-sectional differences in valuation parameters and the size-disparity problems (See Kothari 2001, Kothariand Zimmerman 1995). Some researchers advocate that the return model is theoretically superior to the price model, especially in the absence of well-developed theories of valuation (Gonedes and Dopuch 1974).

might understate the usefulness of accounting numbers. On the other hand, earnings announcements may be largely, but not entirely, pre-empted by the disclosure of other information (Ball and Brown 1968, Beaver 1968). Furthermore, private information search and prior information disclosure can pre-empt the earnings announcement, this leads to less or no market reaction at the announcement date. Hence, this study uses an association methodology involving annual returns window to assess the ability of BTD to explain relative changes in stock returns over the year as in much of literature.

Following a typical annual return model developed by Easton and Harris (1991), the raw return is regressed on the earnings levels, earnings changes and BTD.[69] Market value of equity in year t-1 is used as a deflator for EPS and ΔEPS to reduce heteroscedasticity as it includes the market's expectations for growth and inflation. Total assets are used as a deflating basis to control for the firm size effect on BTD.

$$RET_t = \beta_0 + \beta_1 EPS_t + \beta_2 \Delta EPS_t + \beta_3 BTD_t + \varepsilon_t \qquad (7.7)$$

Where:

$RET_t$: The return on a share of firm i over the 12-months ending on April 30 following the end of fiscal year t.[70]

$EPS_t$: Earnings per share for firm i in year t, deflated by stock price on April 30 following the end of fiscal year t-1;

$\Delta EPS_t$: The annual change in earnings per share between year t and year t-1, deflated by stock price on April 30 following the end of fiscal year t-1;

$BTD_t$: Book-tax differences in year t, deflated by total assets.

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[69] Easton and Harris (1991) demonstrate that earnings level is a relevant explanatory variable for returns. Including both earnings level and earnings changes variables can mitigate the measurement error in regression estimates of the coefficients concerning unexpected earnings and unexpected returns.

[70] Because Chinese listed firms are required to release their annual reports by April 30 following the fiscal year-end. The cumulative stock returns over the four months subsequent to fiscal year-end are incorporated to assure that the stock price reflects the market reaction to the publication of the annual financial reports.

If large BTD is informative for poor future earnings, there appears to be a negative association between BTD and stock returns.

Since much of literature employs the unexpected return model to test the value relevance (Lev and Thiagarajan 1993, Abarbanell and Bushee 1997), this study also uses a cumulative abnormal return (CAR) model as a robustness check to evaluate whether BTD is an explanatory variable for unexpected return. The cumulative abnormal return is calculated by subtracting the market return from the stock returns monthly over the 12 months, ending on April 30 following the end of fiscal year t. The CAR model is estimated as follows:

$$CAR_t = \alpha_0 + \alpha_1 EPS_t + \alpha_2 \Delta EPS_t + \alpha_3 BTD_t + \varepsilon_t \qquad (7.8)$$

Where:

$CAR_t$ : The cumulative abnormal return on a share of firm i, calculated monthly over the 12 months, ending on April 30 following the end of fiscal year t;

$EPS_t$: Earnings per share for firm i in year t, deflated by stock price on April 30 following the end of fiscal year t-1;

$\Delta EPS_t$: The annual change in earnings per share between year t and year t-1, deflated by stock price on April 30 following the end of fiscal year t-1;

$BTD_t$: Book-tax differences in year t, deflated by total assets.

To calculate the abnormal return for each firm, three approaches are commonly used: mean-adjusted return model, market-adjusted return model and a market model (Brown and Warner 1980).

In a mean-adjusted return model, market-wide factors and risks are not taken into account explicitly. The expected return is equal to a constant, estimated by averaging a series of returns for the estimation period.

$$AR_{it} = R_{it} - \overline{R}_{i} \tag{7.9}$$

In a market-adjusted return model, the expected return is equal to the market return for that period and constant across securities but not across time.

$$AR_{it} = R_{it} - R_{mt} \tag{7.10}$$

In a market model, the expected return is estimated from a linear regression of stock returns on market returns for the estimation period. The unexpected return is the residual from the market model:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \tag{7.11}$$

$$AR_{it}(\varepsilon_{it}) = R_{it} - (\alpha_i + \beta_i R_{mt}) \tag{7.12}$$

Where:

$AR_{it}$ : The abnormal return on security i for year t;

$R_{it}$ : The actual return on security i for year t;

$R_{mt}$ : The market return for year t;

$\overline{R}_{i}$ : The average actual return on security i for estimation period.

Dyckman *et al.* (1984) and Brown and Warner (1985) compare these three models and find that their abilities to detect the abnormal return are similar. Following most empirical studies pertaining to the Chinese capital markets (e.g. He and He 2001, Han 2004), this study use a market-adjusted return model to estimate unexpected return. Shanghai and Shenzhen Stock Exchange Composite Indices for year t are expected as market returns for year t. Thus, in equation (7.10),

$$R_{mt} = (Index_{t} - Index_{t-1}) / Index_{t-1} \tag{7.13}$$

$$R_{it} = (P_{i,t} - P_{i,t-1}) / P_{i,t-1} \quad (7.14)$$

## 7.3 Data Collection

This section explains data requirements and describes data sources, sample selection criteria and analyses sample characteristics.

### 7.3.1 Data Sources

The empirical analyses in this study require accounting data and stock market data. The BTD and accounting data were primarily hand-collected from China's B-shares listed firms' English-version financial statements and their tax notes.[71] The sources of annual financial reports include the Chinese official websites of www.cninfo.com.cn and www.sse.com.cn, which are designated by the Chinese Securities Regulatory Commission (CSRC) for information disclosure of listed companies, and electronic copies or hardcopies provided by the Chinese listed firms upon request.

The market data (i.e. stock prices and Stock Exchange Composite Indices) were taken from the DataStream Database. The information about rights issues, public offering and the largest shareholder used to test earnings management hypotheses was hand-collected from Shanghai and Shenzhen Stock Exchange Fact Books or the CSRC official websites, such as www.cninfo.com.cn and www.sse.com.cn. The information about applicable tax rate, number of tax rates and tax holidays used to test tax management hypotheses was abstracted from tax notes in B-shares firms' both Chinese- and English-version financial statements. In the event of difference in interpretation between two versions, Chinese version prevails.

[71] The information of BTD is not readily available on any computerized database.

### 7.3.2 Sample Selection

Because only B-shares firms are required to disclose the information of BTD in their English-version annual financial statements, the population in this study is the Chinese B-shares firms listed on either the Shanghai or Shenzhen Stock Exchanges for the period from 1999 to 2004.[72]

Firm inclusion is determined by the following criteria: (1) it has released BTD information in its annual reports; (2) it has a minimum of three consecutive years of data; and (3) it is not subject to special accounting and tax rules that apply to the agriculture, mining, wholesale & retailer and construction industries.

**Table 7.1**
**Sample Selection Criteria**

| Selection Criteria | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | Total |
|---|---|---|---|---|---|---|---|
| Total number of B-shares firms | 108 | 114 | 112 | 111 | 110 | 109 | 664 |
| Less: | | | | | | | |
| Missing data | 16 | 8 | 4 | 4 | 7 | 13 | 52 |
| Firms without 3-yr consecutive data | 1 | 1 | 1 | 1 | 1 | 0 | 5 |
| Firms in agriculture, mining, construction, wholesale & retailer industries | 4 | 6 | 6 | 6 | 6 | 5 | 33 |
| Final Sample | 87 | 99 | 101 | 100 | 96 | 91 | 574 |

The total sample of all B-shares firm-year observations from 1999 to 2004 is 664. After applying the above criteria, as shown in Table 7.1, the final firm-year observation set is reduced to 574.

[72] The short observation period of 1999-2004 is because the disclosure regulation issued by the CSRC has not been implemented efficiently. Although the CSRC requires that B-shares firms must release both Chinese and English-version annual financial reports on a designated website by April 30 of the following fiscal year, most B-shares firms did not disclose their English reports before 1998.

Table 7.2 shows the industry profile of the sample firms in each year. Approximately 70% observations are in manufacturing industry. In non-manufacturing industry, except for the industries of transport and real estate, the average observations in other industries are less than six during observation periods.

**Table 7.2**
**Industry Distribution**

| Industrial sector | Number of sample companies | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | total | % |
| Manufacturing: | **62** | **69** | **69** | **68** | **66** | **65** | **399** | **69.5** |
| Food, beverage | 3 | 4 | 4 | 4 | 4 | 3 | 22 | 3.8 |
| Textile, clothing, leather, fibre | 10 | 10 | 10 | 9 | 10 | 10 | 59 | 10.3 |
| Paper, printing | 3 | 3 | 3 | 3 | 3 | 3 | 18 | 3.1 |
| Petroleum, Chemical products | 4 | 4 | 4 | 4 | 3 | 3 | 22 | 3.8 |
| Electrical Equipment | 13 | 13 | 13 | 13 | 13 | 12 | 78 | 13.6 |
| Metal, non-metal Mineral Products | 6 | 7 | 7 | 7 | 7 | 7 | 41 | 7.2 |
| Machinery, Equipment, Meter | 20 | 23 | 23 | 23 | 22 | 22 | 133 | 23.2 |
| Medicine, Biological Products | 2 | 4 | 4 | 4 | 3 | 3 | 20 | 3.5 |
| Other Manufacturing | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1.0 |
| Non-manufacturing: | **25** | **30** | **32** | **32** | **30** | **26** | **175** | **30.5** |
| Transport, Storage | 6 | 8 | 8 | 8 | 7 | 6 | 43 | 7.5 |
| Real estate | 6 | 7 | 7 | 7 | 7 | 6 | 40 | 7.0 |
| Social services (i.e. tourism) | 4 | 5 | 6 | 6 | 6 | 5 | 32 | 5.6 |
| Utilities | 4 | 4 | 4 | 4 | 4 | 3 | 23 | 4.0 |
| Conglomerates | 1 | 2 | 2 | 2 | 2 | 2 | 11 | 1.9 |
| IT | 3 | 3 | 4 | 4 | 3 | 3 | 20 | 3.5 |
| Transmission & Culture (i.e. media) | 1 | 1 | 1 | 1 | 1 | 1 | 6 | 1.0 |
| Total | **87** | **99** | **101** | **100** | **96** | **91** | **574** | **100.** |

Table 7.3 reports the industry profile of the omitted sample under the criteria (1) and (2). Overall, the percentage distribution in manufacturing and non-manufacturing is 61.4% versa 38.6%, similar to the sample distribution of 69.5% versa 30.5% as shown

in Table 7.2. Some specific industries, such as food, textile manufacturing, transport and conglomerates in non-manufacturing, are under-represented in the final sample. The possible consequences are unknown. Because of the small number of cases in most sub-categories, the aggregated manufacturing and non-manufacturing portfolios will be used to control for industry effects in the empirical tests. This is elaborated in Chapter 8.2.1.

**Table 7.3**
**Industry Distribution of Omitting Data Based on Criteria (1) and (2)**

| Industrial sector | Number of sample companies | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | total | % |
| Manufacturing | **10** | **4** | **3** | **3** | **6** | **9** | **35** | **61.4** |
| Food, beverage | 3 | 1 | 1 | 0 | 0 | 2 | 7 | 12.3 |
| Textile, clothing, leather, fibre | 1 | 1 | 1 | 3 | 2 | 2 | 10 | 17.5 |
| Paper, printing | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Petroleum, Chemical products | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1.8 |
| Electrical Equipment | 1 | 2 | 1 | 0 | 1 | 1 | 6 | 10.5 |
| Metal, non-metal Mineral Product | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Machinery, Equipment, Meter | 2 | 0 | 0 | 0 | 1 | 1 | 4 | 7.0 |
| Medicine, Biological Products | 2 | 0 | 0 | 0 | 2 | 2 | 6 | 10.5 |
| Other Manufacturing | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1.8 |
| Non-manufacturing: | **7** | **5** | **2** | **2** | **2** | **4** | **22** | **38.6** |
| Transport, Storage | 2 | 1 | 1 | 1 | 1 | 1 | 7 | 12.3 |
| Real estate | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 3.5 |
| Social services (i.e. tourism) | 2 | 1 | 0 | 0 | 0 | 1 | 4 | 7.0 |
| Utilities | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1.8 |
| Conglomerates | 1 | 2 | 1 | 1 | 0 | 0 | 5 | 8.8 |
| IT | 1 | 1 | 0 | 0 | 1 | 0 | 3 | 5.2 |
| Transmission & Culture (i.e. media) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | **17** | **9** | **5** | **5** | **8** | **13** | **57** | **100.** |

### 7.3.3. Data Analysis

Table 7.4 provides descriptive statistics for firm characteristics of the sample. The mean (median) of BTD is -8 (-1) million yuan, suggesting that tax-effect book income is less than tax-effect tax income on average. There appears a wide dispersion in firm size, such as total assets, equity and revenue. The means (medians) of total assets and equity are 3006 (2019) and 1284 (877) million yuan, respectively. With a large standard deviation of 2654 and a wide range of 26558 million yuan, revenue exhibits a high degree of dispersion. This suggests the scale effect (i.e. total assets, equity and revenue) may be taken into account in the cross-sectional analysis. Given that the variation in BTD is partly affected by size effect, a scaled BTD is applied in later empirical tests in Chapters 8 and 9. To determine the appropriate basis for deflating by size, Table 7.4 reports basic statistics for three scaled BTD on a basis of total assets, equity and revenue, respectively. The bi-variate correlation tests show that BTD scaled by total assets is most closely associated with the raw BTD, which is significantly correlated at 0.84 as compared with 0.17 and 0.25 for BTD scaled by equity and revenue. Therefore, total assets measure is chosen as a deflating basis to control for size effect in this study.

**Table 7.4**
**Descriptive Statistics for Firm Characteristics**

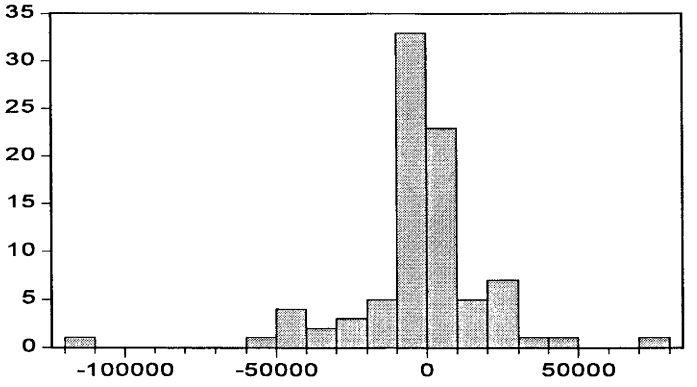
| Variables | Mean | Std. Dev. | Median | Minimum | Maximum | Sample |
|---|---|---|---|---|---|---|
| BTD (million yuan) | -8 | 67 | -1 | -1125 | 667 | 574 |
| Total Assets (million yuan) | 3006 | 3167 | 2019 | 148 | 24151 | 574 |
| Equity (million yuan) | 1284 | 1410 | 877 | -2406 | 8165 | 574 |
| Net Income (million yuan) | 76 | 343 | 39 | -3411 | 2570 | 574 |
| Revenue (million yuan) | 1865 | 2654 | 915 | 0 | 26558 | 574 |
| ΔRevenue (million yuan) | 398 | 1105 | 130 | -3350 | 12852 | 573 |
| Earnings Per Share (yuan) | 0.10 | 0.60 | 0.12 | -7.29 | 3.73 | 574 |
| Book Value Per Share (yuan) | 2.32 | 1.76 | 2.16 | -7.93 | 8.40 | 574 |
| Return of Assets (%) | -0.01 | 0.31 | 0.02 | -3.66 | 0.99 | 574 |
| Return of Equity (%) | 0.04 | 1.17 | 0.06 | -7.96 | 22.29 | 573 |
| BTD scaled by total assets (%) | -0.008 | 0.065 | -0.001 | -1.19 | 0.33 | 574 |
| BTD scaled by equity (%) | -0.007 | 0.218 | -0.001 | -2.42 | 3.3 | 574 |
| BTD scaled by revenue (%) | -0.051 | 0.586 | -0.001 | -12.08 | 0.75 | 573 |

Figure 7.1 depicts the annual frequency histograms of BTD from the corresponding observations from 1999-2004. The histograms show that the sample data are not normally distributed. The distributions of BTD are negatively skewed in 1999, 2001, 2002 and 2004 but positively skewed in 2000 and 2003. Year 2002 appears to be the most skewed and has the highest kurtosis (see statistical data). Such skewness in the sample distribution may result in problems with violations of the assumptions of the regression model (e.g. homoscedasticity). To remedy the non-normality, a number of data transformations are suggested, such as taking the square root, logarithms, or even the inverse of the variables (Hair *et al.* 1998).[73] However, given that BTD variable takes on positive or negative values, the logarithm and square root can not be used. As a result, the original form of BTD is used in the subsequent regressions.

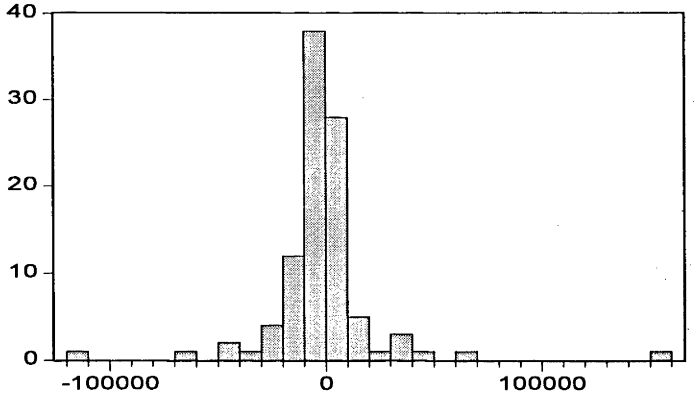
As shown in Figure 7.1, some extreme variables are responsible for the non-normality, especially for Year 2002 and 2003. To examine the potential data errors and influential impacts of extreme values on OLS, this study also performs an outlier analysis before regression running. Because outlying observations may arise from (1) errors in measurement and errors in acquisition; and (2) one or several extreme values from the population which have a considerable influence on the results of an analysis, the handling of outlying observations is an important task in data pre-processing (Wooldridge 2003). This study identifies outliers by plotting the distribution of the sample as shown in Figure 7.1 and comparing minimums and maximums, and then rechecks whether there is a mistake has been made in data entering. The examination shows that there appear no errors in measurement and in acquisition.

[73] Hair et al. (1998) suggest that data transformations provide the principle means of correcting non-normality and heteroscedasticity. Usually negatively skewed distributions are best transformed by employing a square root transformation, whereas the logarithm typically works best on positive skewness (P77).

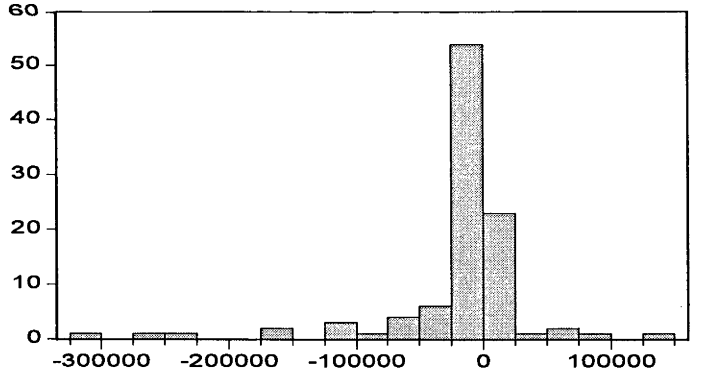
**Figure 7.1**
**Histograms of BTD Distribution in 1999-2004**



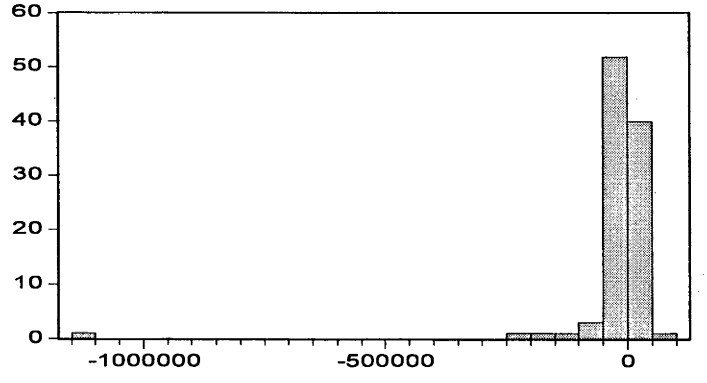

| Series: BTD99 | |
|---|---|
| Sample 1 102 | |
| Observations 87 | |
| Mean | -2600.379 |
| Median | -278.0000 |
| Maximum | 70446.00 |
| Minimum | -113738.0 |
| Std. Dev. | 22418.64 |
| Skewness | -1.189172 |
| Kurtosis | 10.11419 |
| Jarque-Bera | 203.9721 |
| Probability | 0.000000 |



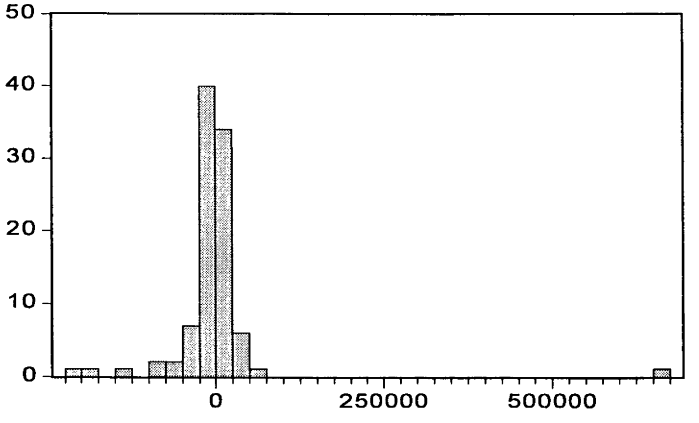

| Series: BTD00 | |
|---|---|
| Sample 1 102 | |
| Observations 99 | |
| Mean | -1356.717 |
| Median | -811.0000 |
| Maximum | 153552.0 |
| Minimum | -118004.0 |
| Std. Dev. | 25795.67 |
| Skewness | 1.365204 |
| Kurtosis | 19.07569 |
| Jarque-Bera | 1096.767 |
| Probability | 0.000000 |



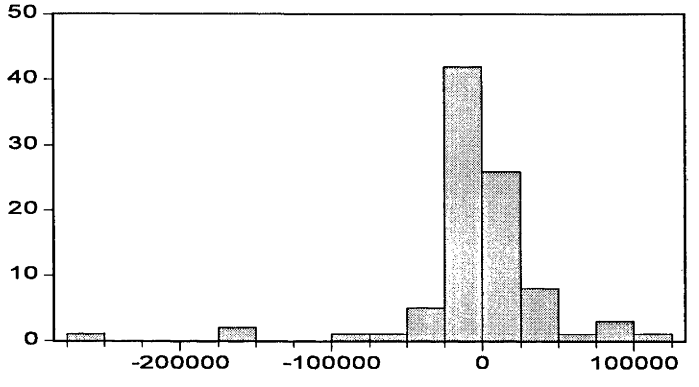

| Series: BTD01 | |
|---|---|
| Sample 1 102 | |
| Observations 101 | |
| Mean | -17090.62 |
| Median | -2720.000 |
| Maximum | 147451.0 |
| Minimum | -302071.0 |
| Std. Dev. | 58853.25 |
| Skewness | -2.560313 |
| Kurtosis | 12.72082 |
| Jarque-Bera | 508.0094 |
| Probability | 0.000000 |




| Series: BTD02 | |
|---|---|
| Sample 1 102 | |
| Observations 100 | |
| Mean | -21328.56 |
| Median | -1665.000 |
| Maximum | 54275.00 |
| Minimum | -1125930. |
| Std. Dev. | 117430.5 |
| Skewness | -8.534672 |
| Kurtosis | 80.04177 |
| Jarque-Bera | 25944.99 |
| Probability | 0.000000 |




| Series: BTD03 | |
|---|---|
| Sample 1 102 | |
| Observations 96 | |
| Mean | -1391.698 |
| Median | -545.5000 |
| Maximum | 666704.0 |
| Minimum | -204154.0 |
| Std. Dev. | 78879.16 |
| Skewness | 6.005620 |
| Kurtosis | 55.72944 |
| Jarque-Bera | 11698.66 |
| Probability | 0.000000 |




| Series: BTD04 | |
|---|---|
| Sample 1 102 | |
| Observations 91 | |
| Mean | -4305.604 |
| Median | -1090.000 |
| Maximum | 117808.0 |
| Minimum | -266109.0 |
| Std. Dev. | 46467.25 |
| Skewness | -2.496462 |
| Kurtosis | 15.63382 |
| Jarque-Bera | 699.7247 |
| Probability | 0.000000 |

The investigated outliers are not the same companies in different years. More importantly, the extreme values of these observations provide important information for the subsequent empirical analysis. For example, the outliers in 2002, Jinan Qingqi Motorcycle Co., Ltd and Wuxi Little Swan Co., Ltd present extreme values of BTD because they experience a big jump in their losses from -816 and -17 million yuan in 2001 to -3412 and -676 million yuan in 2002. However, in 2003, they get a big reverse with a profit of 667 and 54 million yuan, respectively. The similar circumstances also occur in the outliers of Shenzhen China Bicycle Co., Ltd in 2001 and Hainan Airline Co., Ltd (non-manufacturing) in 2003 and Shanghai Kai Kai Industrial Co., Ltd. in 2004. This information is meaningful and has implications for testing the opportunistic book and tax reporting. Thus, the outliers should be retained to ensure generalisability to the

entire population.

To further determine whether deleting or retaining these observations in a regression analysis, this study also re-estimates the multiple regression by excluding the suspected outliers, as suggested by Wooldridge (2003). Using the OLS in equation 7.1, the removing of these observations does not lead to a substantial influence on the initial estimates in terms of coefficient size and significance level. Consequently, no outliers are excluded.

# CHAPTER EIGHT

# EMPIRICAL RESULTS: THE ASSOCIATION BETWEEN ABTD AND EM AND TM INCENTIVES

## 8.1 Introduction

This chapter presents the results of testing the association between ABTD and the incentives for managerial manipulations and provides evidence that ABTD is indicative of EM and TM. Section 8.2 estimates normal and abnormal components in total BTD using both the cross-sectional regressions model and the naïve difference model. Section 8.3 addresses the empirical findings that ABTD is mostly positively associated with the incentives and opportunities for management manipulations. The results support the claim that ABTD is a useful proxy for EM and TM and its magnitude may indicate the extent of aggressive book and tax reporting. Section 8.4 concludes.

## 8.2 Estimating Abnormal BTD

This section identifies the estimated normal and abnormal components of reported BTD using the cross-sectional BTD regressions (Equation 7.3) and a naïve difference model (Equation 7.4).

### 8.2.1 Estimation from the Cross-Sectional BTD Regressions

Table 8.1 reports descriptive statistics and the Pearson correlation coefficients among variables in the BTD model. The mean (median) of scaled *investment in fixed and intangible assets* is 0.509 (0.456), suggesting that approximate 50% total assets

are fixed and intangible assets for the sample. The means of *net operating loss* and *tax loss utilised* are about 5.3% and 0.1% of total assets. In the firm-year observations, approximate 34% of firm-years have net operating loss while about 29% of firm-years have tax loss utilised. Panel B reports univariate correlations. BTD has a significantly negative association with *investment in fixed and intangible assets* and *net operating loss* while the correlations between BTD and *tax loss utilised* are significantly positive, consistent with prior prediction in Chapter 7. BTD is positively correlated with C*hanges in revenue. Changes in revenue* and *investment in fixed and intangible assets* are negatively correlated at only -0.001, indicating a high investment is not necessarily associated with a growth of revenue.

Because the BTD model requires the first-difference data for the changes in revenue, the sample size is reduced from 483 to 436 firm-year observations during 1999 to 2003. As reported in Table 7.2, approximate 70% observations are in the manufacturing industry. The average observations in other industries are less than six during observation periods except for those in transport and real estate industries. This may lead to the bias on estimated coefficients because the statistical tests are performed with a small sample in each industrial portfolio or some industries with small observations are removed.[74] To avoid this potential bias, the sample is split into manufacturing and non-manufacturing instead of a more detailed classification. The regressions are estimated based on each year and the industry portfolios of manufacturing and non-manufacturing.

[74]A substantial amount of estimation error may arise when residual covariance matrices were estimated using only three to six observations per parameter (see Lipe 1986, Bernard 1987).

**Table 8.1**
**Descriptive Statistics and Correlations among Variables for BTD model**

**Panel A: Descriptive Statistics**

| | Mean | Median | Std. Dev. | Minimum | Maximum |
|---|---|---|---|---|---|
| BTD | -0.009 | -0.001 | 0.073 | -1.194 | 0.328 |
| Investment | 0.509 | 0.456 | 0.288 | 0.018 | 2.148 |
| Changes in Revenue | 0.055 | 0.062 | 0.453 | -7.744 | 1.897 |
| Net Operation Loss | 0.053 | 0 | 0.328 | 0 | 3.660 |
| Tax Loss Utilised | 0.001 | 0 | 0.016 | 0 | 0.328 |

**Panel B: Pearson Correlation Coefficients**

| | Book-Tax Differences (BTD) | Investment in Fixed and Intangible Assets (INV) | Changes in Revenue (ΔREV) | Net Operation Loss (NOL) |
|---|---|---|---|---|
| Investment in Fixed and Intangible Assets (INV) | -0.119<br>(0.007) | | | |
| Changes in Revenue (ΔREV) | 0.057<br>(0.006) | -0.001<br>(0.359) | | |
| Net Operation Loss (NOL) | -0.888<br>(0.000) | 0.139<br>(0.002) | -0.084<br>(0.000) | |
| Tax Loss Utilised (TLU) | 0.222<br>(0.000) | 0.010<br>(0.416) | 0.022<br>(0.400) | -0.010<br>(0.416) |

Note:
(1) The sample consists of 436 firm-years for 1999-2003. The figure in parentheses is the p-value using one-tailed test.
(2) Variables definitions:
BTD: reported book-tax differences in year t. INV: the sum of gross property, plant and equipment and intangible assets in year t, and proxies for investment growth. ΔREV: changes in revenues from year t-1 to year t, proxies for economic growth. NOL: the value of accounting loss, proxies for tax loss. TLU: reported tax loss utilised for firm in year t. All variables are deflated by total assets.

Table 8.2 shows estimated coefficients and goodness of fit of the cross-sectional BTD regressions. The F-statistics and adjusted $R^2$s for yearly regressions suggest that the overall model is a good fit and explains most of the variation in BTD. The

explanatory power of regressions in 2001, 2002 and 2003 is much higher than that in 1999 and 2000, especially for non-manufacturing regressions. This may be due to (1) the data sets in 1999 and 2000 have more missing data (see Tables 7.2 and 7.3). This appears to be more remarkable for non-manufacturing sample; and (2) the issuance of new Accounting System for Business Enterprises (ASBE) in 2001 which creates a substantial variation in BTD.[75] Assuming the effect of a new issued regulation may last one to two years, the apparent drop-off of adjusted $R^2$s in 2003 supports the "change in regulation" story. This is also tested by estimating regression for 2004 although it is not used in later estimations of NBTD/ABTD. The adjusted $R^2$s in 2004 for manufacturing and non-manufacturing regressions are weaker than those in 2003, consistent with that it is the trend driven by the diminishing effect of regulation changes.

Collinearity tests, such as the variance-inflation factors and the condition indices are applied. This is because multicollinearity is not only determined by inter-correlations among the independent variables but also by the variance of the independent variables, the Pearson correlation coefficient may not validly detect the impact of mutlicollinearity (Maddala 1992). The variance-inflation factors are all less than 2 and the maximum condition index is 3.9 for the yearly regressions, suggesting that the multicollinearity does not influence the statistical results.[76]

[75] As discussed in Chapter 5, ASBE, as one of the most important accounting standards in China, provides more discretion in accounting choices, e.g., depreciation methods, estimate useful lives and net residual values of fixed assets, the use of historical cost or market value measures, determine the amount of provision for impairment of inventory, fixed and intangible assets, short-term and long-term investments, designated loans receivable, bad debt receivable, construction in progress. It makes Chinese GAAP highly align with IAS and leads to high amounts of BTD.

[76] Belsley, Kuh and Welsch (1980) suggest that the critical values for severe collinearity for condition index is over 30, for VIF is 10. It is generally accepted that condition indices below 15 are consistent with little or no multicollinearity.

**Table 8.2**
**Estimated Coefficients from Cross-Sectional BTD Regressions for Manufacturing and Non-Manufacturing Portfolios**

$$BTD_{it} = \beta_0 + \beta_1 INV_{it} + \beta_2 \Delta REV_{it} + \beta_3 NOL_{it} + \beta_4 TLU_{it} + \varepsilon_{it} \quad \text{(Equation 7.1)}$$

| Coefficients | 1999 | 2000 | 2001 | 2002 | 2003 |
|---|---|---|---|---|---|
| Intercept ($\beta_0$) | | | | | |
| Manufacturing | 0.007** | -0.003 | -0.004 | 0.029*** | -0.013 |
| | (0.04) | (0.30) | (0.37) | (0.00) | (0.25) |
| Non-Manufacturing | -0.003 | 0.0001 | -0.012* | -0.002 | -0.008* |
| | (0.32) | (0.97) | (0.07) | (0.13) | (0.06) |
| INV($\beta_1$) | | | | | |
| Manufacturing | -0.015*** | 0.008 | 0.009 | -0.028** | 0.029 |
| | (0.00) | (0.13) | (0.30) | (0.02) | (0.21) |
| Non-manufacturing | 0.010 | 0.001 | 0.013* | 0.004 | 0.012 |
| | (0.18) | (0.75) | (0.08) | (0.27) | (0.16) |
| $\Delta$REV ($\beta_2$) | | | | | |
| Manufacturing | 0.003 | 0.002 | 0.002 | -0.146*** | -0.003 |
| | (0.82) | (0.75) | (0.82) | (0.00) | (0.70) |
| Non-manufacturing | 0.004 | -0.010 | 0.013 | -0.002*** | -0.0002 |
| | (0.90) | (0.34) | (0.42) | (0.00) | (0.93) |
| NOL ($\beta_3$) | | | | | |
| Manufacturing | -0.146*** | -0.173*** | -0.153*** | -0.316*** | -0.244*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Non-manufacturing | -0.179** | -0.245*** | -0.110*** | -0.169*** | -0.271*** |
| | (0.03) | (0.00) | (0.00) | (0.00) | (0.00) |
| TLU ($\beta_4$) | | | | | |
| Manufacturing | 0.375 | 0.193 | 0.214 | 3.392* | 0.993*** |
| | (0.89) | (0.82) | (0.89) | (0.08) | (0.00) |
| Non-manufacturing | 1.175 | -2.94 | 22.84 | 0.344 | 0.706 |
| | (0.44) | (0.76) | (0.39) | (0.68) | (0.17) |
| Adjusted $R^2$ | | | | | |
| Manufacturing | 82.89% | 80.60% | 95.57% | 97.55% | 89.51% |
| Non-manufacturing | 31.14% | 33.25% | 92.41% | 91.55% | 80.62% |
| F-statistic | | | | | |
| Manufacturing | 48.46 | 64.34 | 367.46 | 657.77 | 137.46 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Non-manufacturing | 2.696 | 3.989 | 89.285 | 84.916 | 30.11 |
| | (0.09) | (0.02) | (0.00) | (0.00) | (0.00) |
| Observations: | | | | | |
| Manufacturing | 41 | 62 | 69 | 67 | 65 |
| Non-manufacturing | 16 | 25 | 30 | 32 | 29 |

Note:
*,**, and ***denote the significance of two-tailed tests at the level of 0.01, 0.05 and 0.10. Figures in parentheses denote the p-values for T-statistics and for F-statistics. In the presence of heteroskedasticity, p-values are adjusted by White's method.
BTD: reported book-tax differences for firm j in year t. INV: the sum of gross property, plant and equipment and intangible assets in year t, and proxies for investment growth. $\Delta$REV: changes in revenue from year t-1 to year t, proxies for economic growth. NOL: the value of accounting loss, proxies for tax loss. TLU: reported tax loss utilised for firm in year t. All variables are deflated by total assets.

As shown in Table 8.2, the estimated coefficients for *net operating loss* are all significantly negative, consistent with the expectation that net operating loss reduces BTD as discussed in Chapter 7. The coefficients for *tax loss utilised* are significantly positive in 2002 and 2003 for manufacturing industry. The estimated coefficients for *investment* are negative for manufacturing in 1999 and 2002 but positive for non-manufacturing in 2001. The coefficients for *changes in revenue* are significantly negative when they are statistically significant.

Some coefficients are not statistically significant in some years possibly because a small sample is used in yearly regressions (e.g. 16-32 observations per regression for the non-manufacturing sample). To test this potential problem, this study also estimates a pooled regression with 436 firm-years, 304 for manufacturing and 132 for non-manufacturing (Appendix 5). The result shows that the coefficients for these four explanatory variables are significantly different from zero, suggesting that they are all contributors of the model fit. The insignificance of the individual coefficients in yearly regressions is partly attributed to a small sample.

Table 8.3 reports descriptive statistics for absolute values of ABTD estimated from the coefficients using the previous year data for industry portfolios. Table 8.3 displays the descriptive statistics of ABTD for manufacturing group in Panel A and for non-manufacturing group in Panel B. The distributions of ABTD for manufacturing and non-manufacturing are more skewed in 2003 than other years. Overall, ABTD for manufacturing is more varying than that for non-manufacturing. ABTD for the two portfolios peaks in 2003 with a mean of 0.033 and 0.025, suggesting that a large magnitude of manipulation occurs in that year. This may be partly attributed to the abolishment of tax refunds in 2002 which immediately increases firms' tax burden and hence stimulates the tax sheltering activities. Figure 8.1 shows the industry-based

distributions of ABTD for each year, suggesting year effects should be taken into account in any pooled analyses.

**Table 8.3**
**Descriptive Statistics of ABTD Estimated from the Cross-Sectional BTD Regressions**

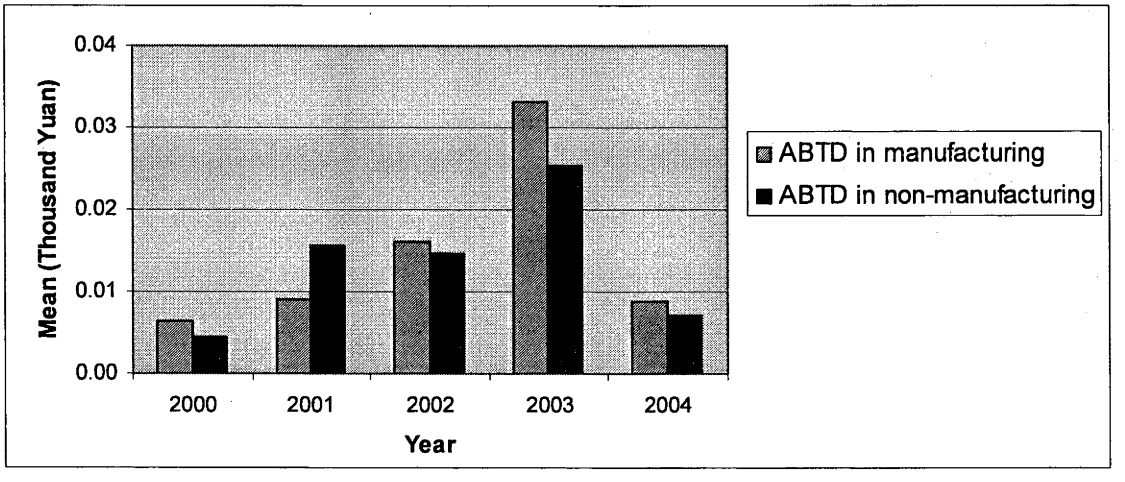
**Panel A: Manufacturing Group**

| | Mean | Std. Dev. | Median | Minimum | Maximum | Sample |
|---|---|---|---|---|---|---|
| ABTD00 | 0.0064 | 0.0070 | 0.0038 | 0.0001 | 0.0363 | 62 |
| ABTD01 | 0.0090 | 0.0174 | 0.0039 | 0.0001 | 0.1108 | 69 |
| ABTD02 | 0.0161 | 0.0787 | 0.0038 | 0.0001 | 0.6466 | 67 |
| ABTD03 | 0.0331 | 0.0965 | 0.0136 | 0.0002 | 0.7753 | 65 |
| ABTD04 | 0.0087 | 0.0086 | 0.0063 | 0.0001 | 0.0458 | 65 |
| Average | 0.0147 | 0.0416 | 0.0063 | 0.0001 | 0.3229 | 65 |

**Panel B: Non-Manufacturing Group**

| | Mean | Std. Dev. | Median | Minimum | Maximum | Sample |
|---|---|---|---|---|---|---|
| ABTD00 | 0.0044 | 0.0042 | 0.0028 | 0.0000 | 0.0154 | 25 |
| ABTD01 | 0.0156 | 0.0538 | 0.0039 | 0.0002 | 0.2977 | 30 |
| ABTD02 | 0.0146 | 0.0253 | 0.0073 | 0.0003 | 0.1261 | 32 |
| ABTD03 | 0.0253 | 0.0800 | 0.0032 | 0.0002 | 0.4299 | 30 |
| ABTD04 | 0.0071 | 0.0096 | 0.0039 | 0.0003 | 0.0413 | 26 |
| Average | 0.0134 | 0.0346 | 0.0042 | 0.0002 | 0.1821 | 29 |

**Figure 8.1**
**The Industry-Based Distributions of ABTD Estimated from the Cross-Sectional BTD Regressions for 2000-2004**



### 8.2.2 Estimation from a Naïve Difference Model

A naïve difference model to estimate ABTD is used to benchmark the performance of the regression model. Using equation 7.4, ABTD is estimated as the differences between the current year's reported BTD and the previous year's reported BTD. The BTD variables are all scaled by total assets to control for firm size.

Table 8.4 presents descriptive statistics of absolute values of naïve ABTD for manufacturing and non-manufacturing groups for 2000-2004. Figure 8.2 depicts the industry-based distributions of ABTD from a naïve prediction model. The distributions of ABTD in Figure 8.2 are similar to those from the regression based, except for estimated ABTD for non-manufacturing in 2003.

**Table 8.4**
**Descriptive Statistics of ABTD Estimated from the Naïve Difference Model**

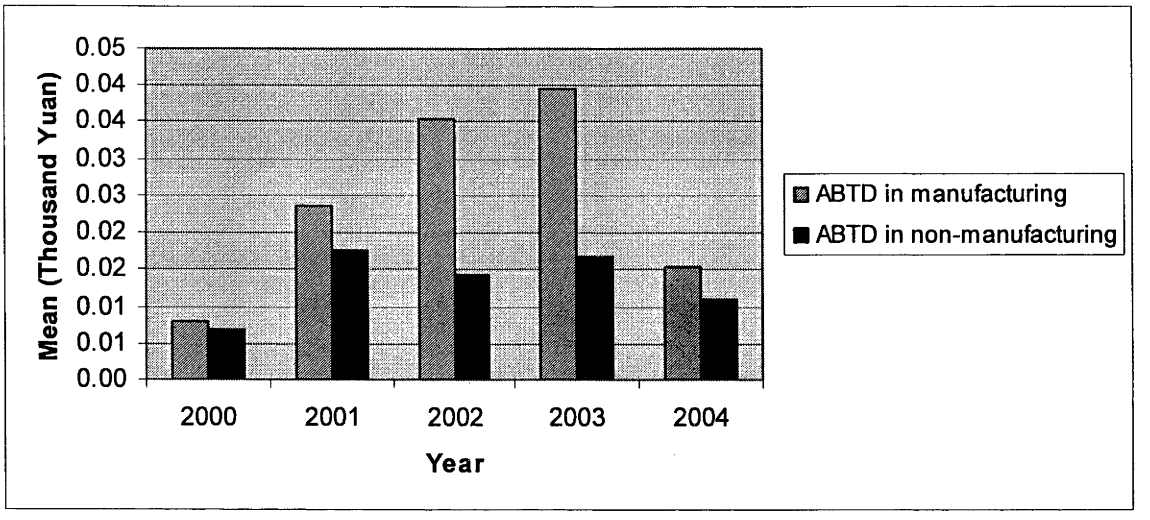
**Panel A: Manufacturing Group**

| | Mean | Std. Dev. | Median | Minimum | Maximum | Sample |
|---|---|---|---|---|---|---|
| ABTD00 | 0.0079 | 0.0107 | 0.0000 | 0.0025 | 0.0508 | 62 |
| ABTD01 | 0.0237 | 0.0821 | 0.0000 | 0.0025 | 0.5393 | 69 |
| ABTD02 | 0.0353 | 0.1502 | 0.0001 | 0.0050 | 1.1155 | 67 |
| ABTD03 | 0.0394 | 0.1949 | 0.0000 | 0.0031 | 1.5216 | 65 |
| ABTD04 | 0.0155 | 0.0457 | 0.0001 | 0.0038 | 0.3259 | 65 |
| Average | 0.0244 | 0.0967 | 0.0001 | 0.0034 | 0.7106 | 65 |

**Panel B: Non-Manufacturing Group**

| | Mean | Std. Dev. | Minimum | Median | Maximum | Sample |
|---|---|---|---|---|---|---|
| ABTD00 | 0.0068 | 0.0077 | 0.0039 | 0.0002 | 0.0328 | 25 |
| ABTD01 | 0.0175 | 0.0454 | 0.0038 | 0.0000 | 0.2401 | 30 |
| ABTD02 | 0.0142 | 0.0285 | 0.0056 | 0.0000 | 0.1349 | 32 |
| ABTD03 | 0.0167 | 0.0308 | 0.0071 | 0.0002 | 0.1288 | 30 |
| ABTD04 | 0.0109 | 0.0191 | 0.0035 | 0.0001 | 0.0827 | 26 |
| Average | 0.0132 | 0.0263 | 0.0048 | 0.0001 | 0.1239 | 29 |

**Figure 8.2**
**The Industry-Based Distributions of ABTD Estimated from a Naïve Difference Model for 2000-2004**




## 8.3 Testing the Association between ABTD and EM and TM Incentives

This section presents empirical results for the tests of Hypotheses 1-7 developed in Chapter 6 where firms with strong incentives for EM and TM are expected to have high levels of ABTD.

**H1:** There is a positive association between ABTD and applicable tax rate.

**H2:** There is a positive association between ABTD and number of tax rates.

**H3**: Firms with a consolidated party in tax holidays have larger ABTD than do their counterparts.

**H4**: Firms with tax loss utilised have larger ABTD than do firms without tax loss utilised.

**H5**: Ceteris paribus, the magnitude of ABTD for firms issuing seasoned equity offering in the next year is larger than that for their counterparts.

**H6a**: Ceteris paribus, the magnitude of ABTD for firms with the first loss at year t is larger than that for other firms.

**H6b**: Ceteris paribus, the magnitude of ABTD for firms with the preceding loss at year t-1 is larger than that for other firms.

**H6c**: Ceteris paribus, the magnitude of ABTD for firms with two consecutive losses at year t-2 and t-1 is larger than that for other firms.

**H7**: Ceteris paribus, the magnitude of ABTD for firms whose largest shareholder is State is larger than other firms.

Overall, the statistical outcomes show that ABTD is positively related to the most incentives for managerial manipulations, interpreting this as evidence that ABTD being an appropriate proxy for EM and TM. The Hypotheses are supported except for Hypotheses 2 and 3 (Hypotheses 2 and 5) for manufacturing (non-manufacturing).

### 8.3.1 Empirical Analysis

Because the values of ABTD were estimated separately for manufacturing and non-manufacturing companies using different regressions, they have seemingly different scales. To avoid the bias due to the different measures, this study runs the multiple regressions separately for each group rather than simply pooling them into one regression. Panel A of Table 8.5 shows descriptive statistics for the dependent and independent variables used in the regression analysis for testing Hypotheses 1-7. For the manufacturing sample, the mean of *applicable tax rate* is 19.62%. The minimum *applicable tax rate* is 0% and the maximum is 33%. The mean and the maximum of *Number of tax rates* for sample firms are 2.61 and 10. Comparatively, the non-manufacturing companies have average 20% *applicable tax rate,* a minimum *applicable tax rate* of 7.5% and a maximum of 33%. The mean and maximum of *Number of tax rates* for sample firms are 2.42 and 5. Approximately, 55% of manufacturing and 46% of non-manufacturing firm-year observations obtain tax

holiidays, indicating that manufacturing entities obtain more tax preference and different tax: treatment, leading to their average tax burden is lower than non-manufacturing entiities. The percentages of firms with the first loss at year t (Loss) and firms with the preceding loss at t-1 (Loss1) (11% and 14%) in non-manufacturing are higher than that in manufacturing (7% and 9%). This may be due partly to non-manufacturing industry has relative weak profitability or a less extent of earnings management than manufacturing industry. Overall, there are 44 observations with tax loss utilised. About 97% of firm-years are controlled by stated-owned enterprises (SOE). But only 3% firm-years made a seasoned equity offering in next year. The mean of ABTD is 2% of total assets for manufacturing and 1% of total assets for non-manufacturing firms, suggesting that manufacturing industry may have more managerial manipulations than non-manufacturing industry. The two-tailed p-value for paired-sample t-test is 0.008, indiicating there is a significant difference in ABTD between these two sub-samples.

Panel B of Table 8.5 reports correlations between variables. The variables of *applicable tax rate*, *tax loss utilised* and *LOSS2* are significantly positively correlated with ABTD while variables of *number of tax rates* and *tax holidays* are significantly negatively correlated with ABTD in manufacturing sample. Overall, low correlations among the independent variables are reported, except for the high correlation coefficients of 0.58 and 0.62 between *tax holidays* and *Number of tax rates* for manufacturing and non-manufacturing sample, respectively. This may be interpreted as a group with more tax rates (i.e. more subsidiaries in a group) being likely to have a subsidiary with a tax holiday. Because *tax holidays* are dichotomous, this correlation is not expected to cause multicollinearity in linear regressions.

## Table 8.5
## Descriptive Statistics for ABTD Regression

**Panel A: Description of Variables**
**Manufacturing Sample (N=263 firm-year observations):**

| | Mean | Std. Dev. | Minimum | Median | Maximum |
|---|---|---|---|---|---|
| ABTD | 0.02 | 0.06 | 0.00 | 0.01 | 0.78 |
| ATR | 19.62 | 8.33 | 0.00 | 15.00 | 33.00 |
| NUMBER | 2.61 | 1.41 | 1.00 | 2.00 | 10.00 |
| TAXH | 0.55 | 0.50 | 0.00 | 1.00 | 1.00 |
| TLU | 0.12 | 0.32 | 0.00 | 0.00 | 1.00 |
| SEON | 0.03 | 0.17 | 0.00 | 0.00 | 1.00 |
| SOE | 0.95 | 0.22 | 0.00 | 1.00 | 1.00 |
| LOSS | 0.07 | 0.26 | 0.00 | 0.00 | 1.00 |
| LOSS1 | 0.09 | 0.29 | 0.00 | 0.00 | 1.00 |
| LOSS2 | 0.08 | 0.27 | 0.00 | 0.00 | 1.00 |

**Non-manufacturing Sample (N=116 firm-year observations):**

| | Mean | Std. Dev. | Minimum | Median | Maximum |
|---|---|---|---|---|---|
| ABTD | 0.01 | 0.03 | 0.00 | 0.00 | 0.30 |
| ATR | 20.00 | 8.52 | 7.50 | 15.00 | 33.00 |
| NUMBER | 2.42 | 1.09 | 1.00 | 2.00 | 5.00 |
| TAXH | 0.46 | 0.50 | 0.00 | 0.00 | 1.00 |
| TLU | 0.11 | 0.32 | 0.00 | 0.00 | 1.00 |
| SEON | 0.03 | 0.16 | 0.00 | 0.00 | 1.00 |
| SOE | 0.97 | 0.18 | 0.00 | 1.00 | 1.00 |
| LOSS | 0.11 | 0.32 | 0.00 | 0.00 | 1.00 |
| LOSS1 | 0.14 | 0.35 | 0.00 | 0.00 | 1.00 |
| LOSS2 | 0.07 | 0.25 | 0.00 | 0.00 | 1.00 |

**Panel B: Pearson Correlation Coefficients**
**Manufacturing Sample (N=263 firm-year observations):**

| | ABTD | ATR | Number | TAXH | TLU | SEON | SOE | LOSS | LOSS1 |
|---|---|---|---|---|---|---|---|---|---|
| ATR | 0.16 (0.01) | | | | | | | | |
| NUMBER | -0.09 (0.07) | -0.16 (0.01) | | | | | | | |
| TAXH | -0.11 (0.04) | -0.1 (0.05) | 0.58 (0.00) | | | | | | |
| TLU | 0.13 (0.01) | -0.07 (0.14) | 0.07 (0.13) | -0.07 (0.12) | | | | | |
| SEON | -0.01 (0.43) | -0.03 (0.30) | 0.21 (0.00) | 0.07 (0.13) | 0.07 (0.12) | | | | |
| SOE | 0.03 (0.29) | -0.02 (0.38) | -0.04 (0.27) | -0.06 (0.15) | -0.03 (0.34) | -0.06 (0.16) | | | |
| LOSS | -0.03 (0.31) | 0.04 (0.28) | -0.04 (0.27) | -0.01 (0.41) | -0.01 (0.43) | -0.05 (0.21) | 0.06 (0.15) | | |
| LOSS1 | 0.00 (0.47) | 0.04 (0.24) | -0.02 (0.35) | -0.01 (0.46) | -0.03 (0.29) | -0.06 (0.18) | 0.01 (0.43) | -0.04 (0.27) | |
| LOSS2 | 0.32 (0.00) | 0.04 (0.25) | 0.03 (0.32) | 0.03 (0.33) | 0.16 (0.00) | -0.05 (0.21) | 0.07 (0.15) | -0.08 (0.10) | -0.09 (0.07) |

**Table 8.5 (Continued)**
**Non-Manufacturing Sample (N=116 firm-year observations):**

| | ABTD | ATR | Number | TAXH | TLU | SEON | SOE | LOSS | LOSS1 |
|---|---|---|---|---|---|---|---|---|---|
| ATR | -0.01 (0.44) | | | | | | | | |
| NUMBER | 0.02 (0.40) | -0.29 (0.00) | | | | | | | |
| TAXH | 0.03 (0.36) | -0.20 (0.01) | 0.62 (0.00) | | | | | | |
| TLU | 0.05 (0.31) | 0.02 (0.40) | -0.04 (0.34) | -0.05 (0.29) | | | | | |
| SEON | -0.04 (0.35) | -0.10 (0.15) | -0.01 (0.44) | -0.04 (0.33) | -0.06 (0.27) | | | | |
| SOE | 0.06 (0.27) | 0.14 (0.07) | -0.14 (0.06) | -0.11 (0.12) | 0.07 (0.24) | 0.03 (0.37) | | | |
| LOSS | 0.20 (0.01) | 0.02 (0.40) | -0.04 (0.34) | -0.11 (0.13) | -0.13 (0.09) | -0.06 (0.27) | -0.08 (0.19) | | |
| LOSS1 | 0.01 (0.44) | -0.02 (0.40) | 0.05 (0.29) | 0.13 (0.07) | 0.10 (0.15) | -0.07 (0.24) | 0.08 (0.21) | -0.14 (0.06) | |
| LOSS2 | -0.03 (0.38) | 0.06 (0.27) | -0.04 (0.32) | -0.11 (0.11) | 0.23 (0.01) | -0.04 (0.32) | 0.05 (0.29) | -0.10 (0.15) | -0.11 (0.12) |

Note:
(1) P-value is presented in parentheses using one-tailed test.
(2) Variables definitions:
ABTD = absolute value of abnormal BTD;
ATR = applicable tax rate;
Number = the number of different applicable tax rates in a consolidated entity;
TAXH = dummy variable that equals 1 when a consolidated entity has a member company with a tax holiday, and 0 otherwise;
TLU = dummy variable that equals 1 when a consolidated entity has tax-loss utilised, and 0 otherwise;
SEON = dummy variable that equals 1 when a consolidated entity has rights issuing or public offering in next year, and 0 otherwise;
SOE = dummy variable that equals 1 when a consolidated entity whose largest shareholder is the State, and 0 otherwise;
LOSS = dummy variable that equals 1 when a consolidated entity is loss in current year t but not in t-1, and 0 otherwise;
LOSS1= dummy variable that equals 1 when a consolidated entity is loss in year t-1 not in t-2, and 0 otherwise;
LOSS2= dummy variable that equals 1 when a consolidated entity has losses in both t-1 and t-2, and 0 otherwise.

Table 8.6 presents the estimation of equation 7.5, where ABTD (estimated from equation 7.3) is regressed on the various incentives of tax management and earnings management for manufacturing and non-manufacturing portfolios.

**Table 8.6**
**Results of GLS Regression with the Regression-Based ABTD**

$$ABTD = \alpha_0 + \alpha_1 ATR + \alpha_2 Number + \alpha_3 TAXH + \alpha_4 TLU + \alpha_5 SEON + \alpha_6 SOE + \alpha_7 Loss + \alpha_8 Loss1 + \alpha_9 Loss2 + \alpha_{10} Y2001 + \alpha_{11} Y2002 + \alpha_{12} Y2003 + \varepsilon$$

(Equation 7.5)

| | *Predicted Sign* | *Incentives for EM or TM* | *(1) Manufacturing* | *(2) Non-manufacturing* |
|---|---|---|---|---|
| Intercept | ? | | -0.0021 | -0.0044 |
| | | | (-2.86)*** | (-3.36)*** |
| ATR | + | TM | 0.0003 | 0.0001 |
| | | | (14.72)*** | (5.31)*** |
| Number | + | TM | -0.0012 | -0.0002 |
| | | | (-10.50)*** | (-1.34)* |
| TAXH | + | TM | -0.0018 | 0.0011 |
| | | | (-9.55)*** | (2.36)*** |
| TLU | + | TM | 0.0133 | 0.0040 |
| | | | (45.77)*** | (3.13)*** |
| SEON | + | EM | 0.0026 | -0.0013 |
| | | | (6.90)*** | (-2.65)*** |
| SOE | + | EM | 0.0053 | 0.0065 |
| | | | (8.40)*** | (8.97)*** |
| LOSS | + | EM | 0.0016 | 0.0124 |
| | | | (5.04)*** | (11.80)*** |
| LOSS1 | + | EM | -0.0001 | 0.0007 |
| | | | (-0.15) | (0.73) |
| LOSS2 | + | EM | 0.0203 | -0.0011 |
| | | | (3.28)*** | (-1.57)* |
| Y2001 | ? | | -0.0022 | 0.0005 |
| | | | (-10.89)*** | (0.24) |
| Y2002 | ? | | -0.0016 | 0.0019 |
| | | | (-6.76)*** | (4.89)*** |
| Y2003 | ? | | 0.0119 | -0.0005 |
| | | | (35.56)*** | (-1.03) |
| Adj. $R^2$ | | | 75.54% | 39.44% |
| F-statistic | | | 68.42 | 7.24 |
| P-value | | | (0.000) | (0.000) |
| Sample | | | 263 | 116 |

(1) *, ** and *** denotes the significance of one-tailed t-test at the level of 10%, 5% and 1%. Figures in parentheses denote t-statistics based on the heteroscedasticity-consistent covariance matrix (White, 1980).
(2) Variables definitions:
ABTD = absolute value of abnormal BTD;
ATR = applicable tax rate;
Number = the number of different applicable tax rates obtained in a consolidated entity;
TAXH= dummy variable that equals 1 when a consolidated entity has a member company with a tax holiday, and 0 otherwise;
TLU = dummy variable that equals 1 when a consolidated entity has tax-loss utilised, and 0 otherwise;
SEON = dummy variable that equals 1 when a consolidated entity has rights issuing or public offering in next year, and 0 otherwise;
SOE = dummy variable that equals 1 when a consolidated entity whose largest shareholder is the State, and 0 otherwise;
LOSS = dummy variable that equals 1 when a consolidated entity is loss in current year t but not in t-1, and 0 otherwise;
LOSS1= dummy variable that equals 1 when a consolidated entity is loss in year t-1 not in t-2, and 0 otherwise;
LOSS2= dummy variable that equals 1 when a consolidated entity has losses in both t-1 and t-2, and 0 otherwise;
Y2001=dummy variable that takes 1 when it is in the year 2001 and 0 otherwise;
Y2002= dummy variable that takes 1 when it is in the year 2002 and 0 otherwise;
Y2003= dummy variable that takes 1 when it is in the year 2003 and 0 otherwise.

***Manufacturing Regression***

For manufacturing, all estimated coefficients, except for Loss1, are significant at the 0.01 level using one-tailed test. The F-statistic (68.42) and adjusted $R^2$ (75.54%) suggest that the model is a good fit and explains most of the variation in ABTD. Consistent with Hypothesis 1, which predicts that a higher applicable tax rate creates incentives for tax planning, resulting in a larger ABTD, *applicable tax rate* is positively associated with ABTD. Holding others variables constant, the coefficient on applicable tax rate suggests that, on average, one percent increase in applicable tax rate contributes 3 percent increase in absolute value of scaled ABTD.

Hypothesis 2 predicts that a positive association between *Number of tax rates* and ABTD because more different tax rates provide more opportunities for firms to engage in tax planning. Contrary to Hypothesis 2, the coefficient on *Number of tax rates* is significant but negative, suggesting that firms with access to more tax rates in the group have less likelihood of TM. This is inconsistent with the U.S. literature that suggests more different tax rates provide more opportunities for tax avoidance. However, this finding supports the anecdotal stories and some Chinese scholars' conjectures: establishing good relationships with tax authorities to seek much more tax preference is the most popular, easiest and direct methods of tax planning in China.[77] The basic statistics in Table 8.5 show that 55% of firm-years observations have tax holidays and 78% of observations have two or more different tax rates. The mean of ATR is 20%, far below the statutory rate of 33%. These data suggest that: (1) Chinese government provides generous tax concessions to listed firms, resulting in multiple tax treatment within a consolidated entity being common; and (2) Chinese listed firms reduce their overall tax burden by pursuing tax preference or tax holidays, implying

[77] I appreciate valuable suggestions from Professor Xiao Chen, at Tsinghua University and Professor Liyan Wang, at Beijing University on this issue.

obtaining more number of tax rates itself is a kind of tax planning. While this low-risk and low-cost tax planning strategy can be accomplished easily, it reduces listed firms' likelihood to undertake other tax strategies that may be reflected in ABTD, such as exploiting managerial choices in tax reporting or tax-induced income shifting.

Inconsistent with Hypothesis 3, the coefficient on *tax holidays* is significantly negative, indicating that firms with tax holidays are less likely to avoid tax than those without tax holidays. This is consistent with the findings in Chan and Mo (2000), where they document that firms are most compliant while in a tax holiday.[78]

Hypothesis 4 predicts that firms with tax loss utilised will have larger ABTD due to income-shifting tax strategies. Consistent with this prediction, the coefficient on *tax loss utilised* indicates that, ceteris paribus, firms with tax loss utilised have larger ABTD than that without tax loss utilised.

Consistent with Hypotheses 5 and 7 predicting that firms issuing seasoned equity offering in the next year and firms whose largest shareholder is State will have larger ABTD due to their strong incentives for EM, the estimated coefficients on both dummy variables are significantly positive. On average, the magnitude of scaled ABTD for firms with a seasoned equity offering in the next year and SOE are larger than that for non-SEON and non-SOE firms.

Hypotheses 6a, 6b and 6c suppose that loss firms are more likely to engage in earnings management to avoid subsequent loss, delisting or trading restrictions. The empirical results in Table 8.6 provide support for Hypotheses 6a and 6c. The coefficients on *Loss2* and *Loss* are significantly positive. In particular, the coefficient on

[78] Chan and Mo (2000) investigate the tax holiday effects on a company itself rather than on a consolidated group.

*Loss2* suggests that ABTD for *Loss2* firms is larger than *Loss* and *Loss1* firms, consistent with the prediction that firms with two successive years of loss have a pressing incentive for EM to avoid delisting or trading restrictions. Firms in the first loss year ($\alpha_7$=0.0016) also have larger ABTD than *Loss1* firms, but its size is less than *Loss2* ($\alpha_9$=0.0203). However, the coefficient on *Loss1* is insignificant, which does not support Hypothesis 6b. Possible reasons for this include the following: (1) when a firm has a loss in previous year, it should firstly try to improve the operating performance instead of manipulating earnings. After all, the major objective of business is making a real profit; and (2) if firms have taken a big bath in its first loss year, the next year's earnings may be improved even in the absence of earnings management due to the reversal effect. These may lead to a less extent of earnings management for firms with a preceding year loss. However, the paired-samples t-test shows there are no significant differences in ABTD between the sub-samples of Loss and Loss1.[79] So, these are merely speculative and further research would be needed to ascertain their applicability.

***Non-Manufacturing Regressions***

For non-manufacturing group, the regression results, to some extent, are similar to those for manufacturing. Table 8.6 shows that all estimated coefficients, except for *Loss1*, are significant at the 10% level using one-tailed test. Overall, the F-statistic (7.24) at 0.01 level and the adjusted $R^2$ (39.44%) are much weaker than that in manufacturing regression. This is possibly because non-manufacturing sample is in small size and combines observations in seven different industries, such as transport, IT, real estate, services, and utilities. The explanatory power may be weakened by the mixed industry effects.

[79] Two-tailed *p*-value for paired-samples test is 0.97 for Loss and Loss1 sub-samples.

There are three important differences in the tested variables, with different signs for *tax holidays*, *seasoned equity offerings* and *two-year losses.* The coefficient on *tax holidays* for non-manufacturing is significantly positive, suggesting that firms with tax holidays are more likely to engage in tax management, leading to larger ABTD. This may be attributed to the different application of tax holidays in different industries. As shown in Table 5.2 and 5.3 in Chapter 5, the manufacturing-oriented entities are easier to get a long tax holiday (e.g. a two-year exemption and three-year reduction). In contrast, tax holidays for non-manufacturing-oriented entities are short (i.e. one-year exemption and two-year reduction) and only available for few entities (e.g. IT and new established service firms). Thus, non-manufacturing entities have more incentives for saving taxes by exploiting tax holidays than manufacturing companies.

The coefficients on SEON and Loss2 for non-manufacturing are negative, indicating that firms with seasoned equity offerings in the next year and firms with successive two-year losses have a less extent of earnings manipulation. This may be caused by manufacturing entities being easier to manage earnings because they have more discretion in accounting choices (e.g. choices in depreciation, cost allocation and asset valuation) and more channels to manage earnings by real transactions (e.g. arrangements in manufacturing chains and products flow). This is consistent with the descriptive evidence that non-manufacturing firm-years have lower ABTD than manufacturing and the paired-samples t-test result that ABTD is significantly different in these two sub-samples (as reported in Table 8.5).

Overall, ABTD is positively associated with the incentives for EM and TM. Firms with more incentives and opportunities for tax management (e.g. firms with a high tax rate, tax loss utilised) and earnings management (e.g. loss firms, SOE firms) are likely to have larger ABTD. The different results for two portfolios in terms of *tax holidays*,

*seasoned equity offerings* and *two-year losses* suggest that industry characteristics may affect the behaviour and extent of firms' earnings management and tax management. With larger data sets, finer industry controls may potentially enrich these results.

To examine the potential impact of multicollinearity on the regression results, some diagnostic tests such as variances-inflation factors and the condition indices are applied. All variances-inflation factors are below 1.7 and the maximum condition index is less than 15. Therefore, multicollinearity is not expected to affect the inferences drawn from the results. The potential heteroskedasticity and serial correlation were tested by using residual analysis and Durbin-Watson statistic. To correct for the detected heteroskedasticity and serial correlation, White (1980)'s method and Generalised Least Squares (GLS) are applied. It seems unlikely that the results are the consequences of these statistical problems. Model robustness tests are reported in next section.

### 8.3.2 Sensitivity Tests

The robustness of the regression results is firstly tested by re-estimating the regression with ABTD estimated from the naïve difference model as elaborated in Section 8.2.2. The results in Table 8.7 are substantially similar to those in Table 8.6, suggesting the regression results in Table 8.6 are robust to alternative measurement.[80] Overall, the F-statistics and adjusted $R^2$s are 2.41 and 6.08% for manufacturing regression and 6.14 and 34.91% for non-manufacturing regression, much weaker than that from regression-based estimation of ABTD.

[80] One major difference is that the coefficients on *Loss1* in both manufacturing and non-manufacturing regressions are significantly positive.

**Table 8.7**
**Results of GLS Regression with the Naïve ABTD**

$$ABTD = \alpha_0 + \alpha_1 ATR + \alpha_2 Number + \alpha_3 TAXH + \alpha_4 TLU + \alpha_5 SEON + \alpha_6 SOE + \alpha_7 Loss + \alpha_8 Loss1 + \alpha_9 Loss2 + \alpha_{10} Y2001 + \alpha_{11} Y2002 + \alpha_{12} Y2003 + \varepsilon$$

(Equation 7.5)

| | *Predicted Sign* | *Incentives for EM or TM* | *(1) Manufacturing* | *(2) Non-manufacturing* |
|---|---|---|---|---|
| Intercept | ? | | 0.0025 | -0.0043 |
| | | | (4.64)*** | (-3.87)*** |
| ATR | + | TM | 0.0002 | 0.0003 |
| | | | (9.73)*** | (8.33)*** |
| Number | + | TM | -0.0010 | -0.0009 |
| | | | (-7.04)*** | (-5.04)*** |
| TAXH | + | TM | -0.0008 | 0.0043 |
| | | | (-3.46)*** | (8.58)*** |
| TLU | + | TM | 0.0013 | -0.0028 |
| | | | (1.41)* | (-3.23)*** |
| SEON | + | EM | 0.0014 | 0.0003 |
| | | | (3.95)*** | (0.43) |
| SOE | + | EM | 0.0011 | 0.0061 |
| | | | (3.15)*** | (11.82)*** |
| LOSS | + | EM | 0.0077 | 0.0147 |
| | | | (15.58)*** | (9.74)*** |
| LOSS1 | + | EM | 0.0076 | 0.0146 |
| | | | (19.25)*** | (7.77)*** |
| LOSS2 | + | EM | 0.0587 | 0.0153 |
| | | | (3.40)*** | (3.65)*** |
| Y2001 | ? | | -0.0006 | 0.0002 |
| | | | (-2.02)** | (0.50) |
| Y2002 | ? | | 0.0006 | -0.0008 |
| | | | (1.78)** | (-1.68)** |
| Y2003 | ? | | -0.0002 | -0.0014 |
| | | | (-0.70) | (-3.12)*** |
| Adj. $R^2$ | | | 6.08% | 34.91% |
| F-statistic | | | 2.41 | 6.14 |
| P-value | | | (0.0056) | (0.000) |
| Sample | | | 263 | 116 |

(1) *, ** and *** denotes the significance of one-tailed t-test at the level of 10%, 5% and 1%. Figures in parentheses denote t-statistics based on the heteroscedasticity-consistent covariance matrix (White, 1980).
(2) Variables definitions:
ABTD = absolute value of abnormal BTD;
ATR = applicable tax rate;
Number = the number of different applicable tax rates obtained in a consolidated entity;
TAXH= dummy variable that equals 1 when a consolidated entity has a member company with a tax holiday, and 0 otherwise;
TLU = dummy variable that equals 1 when a consolidated entity has tax-loss utilised, and 0 otherwise;
SEON = dummy variable that equals 1 when a consolidated entity has rights issuing or public offering in the next year, and 0 otherwise;
SOE = dummy variable that equals 1 when a consolidated entity whose largest shareholder is the State, and 0 otherwise;
LOSS = dummy variable that equals 1 when a consolidated entity is loss in the current year t but not in t-1, and 0 otherwise;
LOSS1= dummy variable that equals 1 when a consolidated entity is loss in year t-1 not in t-2, and 0 otherwise;
LOSS2= dummy variable that equals 1 when a consolidated entity has losses in both t-1 and t-2, and 0 otherwise;
Y2001=dummy variable that takes 1 when it is in the year 2001 and 0 otherwise;
Y2002= dummy variable that takes 1 when it is in the year 2002 and 0 otherwise;
Y2003= dummy variable that takes 1 when it is in the year 2003 and 0 otherwise.

Further to the measurement of the dependent variable, the results are also tested for sensitivity to (1) nonlinearity specification for number of tax rates; (2) the effect of tax holidays on the number of tax rates; (3) the effect of loss on tax management; and (4) the effect of firm size.

Previous research has found that economies of scale exists for tax planning (Gupta and Mills 2002, Rego 2003). In addition, given the other non-tax consideration, ABTD and *number of tax rates* may not be linearly related even though firms with more number of tax rates may have more opportunities to take aggressive tax position. To test whether the linearity specification suggested by the model is appropriate, this study includes a quadratic of *Number of tax rates* (Number²) to capture the non-linear effects.[81] The results are reported in Appendix 6. *Number of tax rates* has an increasing (diminishing) marginal effect on ABTD for manufacturing (non-manufacturing). For manufacturing, the coefficient on *Number of tax rates* is significantly negative ($\alpha_2$ =-0.0055) and the coefficient on *Number²* is significantly positive ($\alpha_3$=0.0005), indicating that ABTD first decreases and then increases with the number of tax rates at the turning point of 5.5. However, only six of the 263 firm-years have more than five different tax rates, about 2.28% of the sample. For non-manufacturing, the coefficient on *Number of tax rates* is significantly positive ($\alpha_2$ =0.0036) and the coefficient on Number² is significantly negative ($\alpha_3$=-0.0006), indicating that ABTD first increases and then decreases with the number of tax rates at the turning point of 3. About 21% of the firm-years in the sample have more than three different tax rates. However, the inclusion of the quadratic term remarkably reduces the model fit for non-manufacturing regression (the adjusted $R^2$ is reduced from 39.4% in

[81] There are several functions introduced by econometrics to capture non-linear effects, e.g. quadratic, natural logarithm, exponential functions and differential calculus. Wooldridge (2004) suggests that quadratic model is simple but one of the most significant non-linear functions. Following prior literature (e.g. Rego 2003, Gupta and Mills 2002) in the field of tax planning, this study chooses quadratic model to capture non-linear relation.

Table 8.6 to 6.9%). The inclusion of a quadratic function does not substantively alter other results reported in Table 8.6.

Second, the regression is re-estimated with the interaction term of *TAXH*Number* to control for the effect of tax holidays on "*Number of tax rates*" (Appendix 7) and by restricting *number of tax rates* only for profitable consolidated entities because the tax rates of loss entities are less likely to provide incentives for tax management (Appendix 8). Both produce weaker results and the inclusion of the interaction terms of *TAXH*Number* and *Number*Profit* does not significantly change the sign and significance level of estimated coefficients.

The tax planning literature has demonstrated a significant relationship between tax planning and firm size, although whether this association is positive or negative, linear or nonlinear appears controversial. For example, the political cost theory suggests that larger firms have less incentives for TM because of more risks of political intervention (Watts and Zimmerman 1978). Zimmerman (1983) and Mills *et al.* (1998) provide support that the largest firms have the highest ETR and larger firms spend less on tax planning than small firms. In contrast, Siegfried (1972) argues that larger firms have greater resources to influence the political process in their favour, to engage in tax planning, and to organise their activities to achieve optimal tax savings and thus face lower ETR. Porcano (1986) provides evidence that the largest firms tend to have the lowest ETRs, due mainly to heavier use of accelerated depreciation allowances and foreign tax credits by the larger firms. Other studies, such as Gupta and Mills (2002), find a concave relationship between tax burden and firm size.

Although ABTD is already scaled by total assets, the regression is re-estimated with a size control variable—the logarithm of total assets at year-end (Appendix 9). The

coefficient on *Size* is positively (negatively) related to ABTD for manufacturing (non-manufacturing) sample at 0.01 level, indicating that size effect on tax management behaviour varies across the industries. The results for other variables are largely unchanged and the model is generally a weaker fit, suggesting that the relationship between ABTD and the incentives for EM and TM is not size dependent.

Overall, results reported in Table 8.6 are robust to alternative measurement and not sensitive to (1) nonlinearity specification for number of tax rates; (2) the effect of tax holidays on the number of tax rates; (3) the effect of loss on tax management; and (4) the effect of firm size.

## 8.4 Summary

To test the usefulness of BTD in indicating aggressive earnings and tax reporting, this study identifies *normal and abnormal* components in total BTD using a cross-sectional regressions model. These two unobservable components are estimated by regressing BTD on factors associated with *normal* BTD. When the resultant model is used to forecast *normal* BTD, the unpredicted BTD is *abnormal* (ABTD).

Next, ABTD is regressed on a set of variables that proxy for various incentives of EM and TM based on manufacturing and non-manufacturing portfolios. The evidence shows that the incentives for EM and TM explain a large portion of the estimated ABTD. The magnitude of ABTD appears to indicate the existence and level of management manipulations, suggesting that it is a useful proxy for EM and TM. A naïve proxy for ABTD is also used to evaluate the robustness of the conceptual design, with similar but slightly weaker results. The conceptual development is supported that BTD not only can reflect the nonconformity of accounting and tax reporting, but also reflect the

managerial manipulations. BTD is a useful indicator of the combined EM/TM after controlling for accounting-tax misalignment.

The informativeness of BTD demonstrated in this chapter justifies its potential value relevance for the capital markets. The empirical tests in this regard are presented in the next Chapter.

# CHAPTER NINE

# EMPIRICAL RESULTS: THE HYPOTHESIS OF VALUE RELEVANCE

## 9.1 Introduction

This chapter demonstrates whether the information embedded in BTD which relates to the differences between GAAP and tax laws, earnings management and tax management, is sufficient to make BTD value relevant. To test the value relevance of BTD, this study examines the predictability of BTD to future earnings and stock returns. The one-year-ahead earnings regression model and the return model are applied. The empirical results are discussed in two sections. Section 9.2 provides evidence that BTD and its components can inform investors of future earnings. The negative association between NBTD (ABTD) and future earnings suggests that the larger NBTD (ABTD) signifies that the current earnings are largely transitory (less persistent), thereby informing on poor performance in future years.

Section 9.3 shows that BTD and its components are significantly negatively associated stock returns, indicating that the predictive information of BTD has been reflected in contemporaneous share returns. The value relevance of BTD is attributed to the information about the differences between GAAP and tax laws, earnings management and tax management. Hypothesis 8 is supported. The negative association between NBTD (ABTD) and stock returns suggests that a large NBTD (ABTD) is a bad news for the capital market, thereby giving rise to a weak price reaction.

Further, BTD is incrementally informative for future earnings and contemporaneous stock returns. On average, BTD adds approximately 44% to the explanatory power of earnings levels and earnings changes with respect to contemporaneous stock returns during 2000-2004.

## 9.2 Testing the Predictive Link

This section tests whether the information embedded in BTD is useful for investors to predict future earnings by using the one-year-ahead earnings regression model.

### 9.2.1 Results from the One-Year-Ahead Earnings Regression Model

Because the model requires one-year-ahead data for EPS, the sample is reduced to 365 firm-year observations. Table 8.8 displays the descriptive statistics and Pearson correlation coefficients for this reduced sample. Panel A of Table 9.1 shows that $EPS_{t+1}$ has higher cross-sectional variation than $EPS_t$ with standard deviation of 0.295 versus 0.180. The average BTD, ABTD and NBTD are all negative with means of -0.01, -0.002 and -0.008. Panel B of Table 8.8 indicates that $EPS_{t+1}$ is significantly positively correlated with $EPS_t$, consistent with the prior literature. As argued in Section 7.2.3, BTD is negatively correlated with $EPS_{t+1}$.

**Table 9.1**
**Descriptive Statistics and Correlations for Variables for the Earnings Regression Model**
**Panel A: Descriptive Statistics (N=365 firm-year observations)**

| | Mean | Std. Dev. | Median | Minimum | Maximum |
|---|---|---|---|---|---|
| $EPS_{t+1}$ | 0.029 | 0.295 | 0.025 | -3.541 | 1.783 |
| $EPS_t$ | 0.038 | 0.180 | 0.026 | -1.154 | 1.469 |
| $BTD_t$ | -0.010 | 0.079 | -0.001 | -1.194 | 0.328 |
| $NBTD_t$ | -0.008 | 0.085 | 0.000 | -0.625 | 1.103 |
| $ABTD_t$ | -0.002 | 0.058 | -0.001 | -0.775 | 0.298 |

**Panel B: Pearson Correlation Coefficients**

| | $EPS_{t+1}$ | $EPS_t$ | $NBTD_t$ |
|---|---|---|---|
| $EPS_t$ | 0.26<br>(0.00) | | |
| $BTD_t$ | -0.05<br>(0.167) | 0.59<br>(0.00) | |
| $NBTD_t$ | -0.02<br>(0.36) | 0.61<br>(0.00) | |
| $ABTD_t$ | -0.04<br>(0.21) | -0.09<br>(0.04) | -0.44<br>(0.00) |

Note:
(1)The sample consists of 365 firm-year observations for 2000-2003.
(2) $EPS_{t+1}$: earnings per share in year t+1, deflating by stock price on April 30 following the end of fiscal year t; $EPS_t$: earnings per share in year t, deflating by stock price on April 30 following the end of fiscal year t. BTD: book-tax differences in year t; ABTD: abnormal BTD in year t; NBTD: normal BTD in year t, all deflating by total assets.
(3) P-value is presented in parentheses using one-tailed test.

To test whether the information of BTD is useful for investors to predict future earnings and provides incremental explanatory power over current EPS, this study runs a univariate benchmark model as Model 1 and one-year-ahead earnings per share (EPS) is regressed on current EPS and BTD as Model 2 (Equation 7.6). To further determine whether the predictability of BTD for future earnings is attributed to NBTD and/or ABTD, Model 3 replaces total BTD with NBTD and ABTD.

Table 9.2 shows the results of the three pooled regressions. The first row reports that contemporaneous EPS is significantly related to future earnings at the 0.05 level in the univariate model. The second row shows the results of the regression of future earnings on contemporaneous earnings and BTD. As expected, BTD is negatively significant at the 0.01 level. For a given level of accounting earnings, higher BTD implies lower future earnings, indicating that the information in BTD appears to be useful in interpreting the information in current earnings. This is consistent with the inference in Chapter 4 that higher (lower) BTD reflects more (less) transitory components of earnings and less (more) persistent of earnings, thereby informing on poorer (better) performance in future years. After including the variable of BTD, the coefficient on EPS is significantly different from zero at the 0.01 level. The Adjusted $R^2$ in Model 2 is 13.1%, larger than 6.6% in the benchmark model. The partial F-statistic (27.08) is significant at the 0.01 level, indicating that BTD is incrementally informative for future earnings beyond current-year earnings.

The last row in Table 9.2 shows that, the coefficients on NBTD (-4.45) and ABTD (-5.64) are significantly different from zero at the 0.01 level, indicating that both of them are informative for future earnings. The negative association between ABTD and future earnings suggests that a large ABTD is an indicator of lower earnings quality, consistent with Hanlon (2005)'s findings.[82] The negative association between NBTD and future earnings supports the inference that the policy-related information may identify some transitory components in earnings. The uncertainty and possible reversal effects of these transitory components lead to a less persistence of current earnings. The adjusted $R^2$ and F-statistic are 13.8% and 19.30, higher than those in Model 2. The partial F-statistics, as reported, are significant at the 0.01 level, indicating that the separate investigation has incremental explanatory power over total BTD.

[82] Hanlon (2005) demonstrates that firms with large BTD have less persistent earnings than firms with small BTD. The result in this study directly shows that ABTD is negatively associated with future earnings.

**Table 9.2**

**Results for OLS Regressions of One-Year-Ahead EPS on Deflated EPS, BTD and Its Components**

| | Sample | Intercept | EPS | BTD | ABTD | NBTD | Adj.$R^2$ | F-stat. | Partial F-stat.[a] |
|---|---|---|---|---|---|---|---|---|---|
| Pooled Model 1 | 365 | 0.012<br>(0.744) | 0.45<br>(1.97)** | | | | 0.066 | 7.48*** | |
| Model 2 | 365 | -0.07<br>(-0.99) | 0.76<br>(3.12)*** | -1.19<br>(-3.89)*** | | | 0.131 | 11.94*** | 27.08*** |
| Model 3 | 365 | -0.07<br>(-1.07) | 0.83<br>(3.21)*** | | -0.84<br>(-5.64)*** | -1.38<br>(-4.45)*** | 0.138 | 19.30*** | 2.93*** |

Model 1: $EPS_{t+1} = \beta_o + \beta_1 EPS_t + \beta_2 Y2001 + \beta_3 Y2002 + \beta_4 Y2003 + \varepsilon_{t+1}$

Model 2: $EPS_{t+1} = \beta_0 + \beta_1 EPS_t + \beta_2 BTD_t + \beta_3 Y2001 + \beta_4 Y2002 + \beta_5 Y2003 + \varepsilon_{t+1}$

Model 3: $EPS_{t+1} = \alpha_0 + \alpha_1 EPS_t + \alpha_2 ABTD_t + \alpha_3 NBTD_t + \alpha_4 Y2001 + \alpha_5 Y2002 + \alpha_6 Y2003 + \varepsilon_{t+1}$

Note:

(1) * denotes the significance at the level of 10% using a two-tailed test; ** denotes the significance at the level of 5% using a two-tailed test; *** denotes the significance at the level of 1% using of a two-tailed test. Figures in parentheses denote t-statistics based on the heteroscedasticity-consistent covariance matrix (White 1980).

(2) Variables definitions:

$EPS_{t+1}$: earnings per share in year t+1, deflating by stock price on April 30 following the end of fiscal year t; $EPS_t$: earnings per share in year t, deflating by stock price on April 30 following the end of fiscal year t. BTD: book-tax differences in year t; ABTD: abnormal BTD in year t; NBTD: normal BTD in year t, all deflated by total assets.

(3) [a] The partial F-statistics are used to test whether Model 2 (Model 3) has incremental explanatory power over Model 1 (Model 2).

As a result, BTD and its components are informative for future earnings and significantly improve the predictability of current earnings to future earnings.

### 9.2.2 Sensitivity Tests

This study performs some sensitivity tests to determine the strength of the main regression results of Models 2 and 3 as reported in Table 9.2. Specifically, it tests whether the results are sensitive to (1) auto-correlated errors and year-by-year regressions; (2) different deflator of BTD; and (3) the inclusion of industry control variable.

Because the earnings regression model includes a lagged dependent variable, it may be easier to raise auto-correlated errors that will cause the usual OLS statistics to be invalid for testing purpose. In this case, Durbin-Watson statistic may be invalid even in larger samples. As suggested by Wooldridge (2003), this study uses a AR(1) model to test for the possibility of serial correlation in the pooled regression. In the AR(1) model, the null hypothesis is that errors are serially uncorrelated. The t-tests for AR(1) serial correlation in Models 2 and 3 yield $\hat{\rho}$ = 0.04, t = 0.68, p-value = 0.49 and $\hat{\rho}$ = 0.03, t = 0.82, and p-value=0.41, respectively. Therefore, there is no evidence of autocorrelation in the errors, which means the t-statistics for the coefficients obtained from Table 9.2 is valid for inference.

However, one might argue that AR test is flawed in a short time-series application. In particular, the samples in this study only have four-year data set in which AR model may not address the serial correlation. To remedy the potential weakness, this study also estimates Model 2 and Model 3 on a year-by-year basis. As shown in Appendix 10, the results of yearly regressions are similar to those in Table 9.2. Thus, it is concluded

that correlated error does not account for the statistical significance of the results. Consistently, BTD and NBTD are significantly negatively associated with future earnings in all years. ABTD is also significantly negative at the 0.01 level in year 2002 and 2003 but insignificant in year 2000 and 2001.

Second, a different deflator is applied in the main model (Model 2), where BTD deflated by total assets is replaced with BTD per share deflated by price at year t-1. The results in Appendix 11 show that there appear no substantial changes in prior results. The alternative deflator of BTD remarkably reduces model fit for the yearly regressions.

Finally, the regressions are re-estimated with an industry variable in both Model 2 and Model 3 to control for the industry impact on future earnings. As shown in Appendix 12, the industry effect is not significant and all F-statistics in pooled and yearly regressions are lower than those reported in Table 9.2. This inclusion does not substantially change prior outcomes.

Overall, BTD and its components are demonstrated to be informative about future earnings. Tests of auto-correlated errors and year-by-year regressions, different scaler and industry control indicate that the results are robust to these controls.[83]

## 9.3 Testing the Valuation Link

While the information embedded in BTD is demonstrated to be predictive for future earnings, this section tests whether this predictive information in BTD can be

[83] There appears no multicollinearity problem in these regressions. The highest condition index is 2.88 and the highest variance inflation factor is 2.18, below the benchmarks of multicollinearity. The study also calculated VIF for each yearly regression. In no case was the factor above 2 in any of regressions.

reflected in contemporaneous share returns by examining the association of BTD and its components with stock returns.

### 9.3.1 Results from the Return Model

This section examines whether BTD and its components are correlated with contemporaneous stock returns.

**Table 9.3**
**Descriptive Statistics and Correlations for Variables for the Return Model**
**Panel A: Description of Variables (N= 468 firm-year observations)**

| Variables | Mean | Std. Dev. | Median | Minimum | Maximum |
|---|---|---|---|---|---|
| $RET_t$ | 0.504 | 1.650 | -0.161 | -0.727 | 9.476 |
| $EPS_t$ | 0.035 | 0.172 | 0.027 | -1.154 | 1.469 |
| $\Delta EPS_t$ | 0.018 | 0.214 | 0.002 | -1.065 | 2.823 |
| $BTD_t$ | -0.009 | 0.072 | -0.001 | -1.194 | 0.328 |
| $ABTD_t$ | -0.002 | 0.052 | 0.000 | -0.775 | 0.298 |
| $NBTD_t$ | -0.007 | 0.076 | -0.001 | -0.624 | 1.103 |

**Pearson Correlation Coefficients**

| Variables | $RET_t$ | $EPS_t$ | $\Delta EPS_t$ | $NBTD_t$ |
|---|---|---|---|---|
| $EPS_t$ | 0.19<br>(0.00) | | | |
| $\Delta EPS_t$ | 0.10<br>(0.01) | 0.47<br>(0.00) | | |
| $BTD_t$ | 0.06<br>(0.10) | 0.59<br>(0.00) | 0.38<br>(0.00) | |
| $NBTD_t$ | 0.04<br>(0.18) | 0.60<br>(0.00) | 0.60<br>(0.00) | |
| $ABTD_t$ | 0.02<br>(0.34) | -0.07<br>(0.07) | -0.36<br>(0.00) | -0.43<br>(0.00) |

(1) $RET_t$: the return over the 12-months ending on April 30 following the end of fiscal year t; $EPS_t$: earnings per share in year t, deflated by stock price on April 30 following the end of fiscal year t-1; $\Delta EPS_t$: annual difference changes in earnings per share for period t deflated by stock price on April 30 following the end of fiscal year t-1; $BTD_t$: book-tax differences in year t; $ABTD_t$: abnormal BTD in year t; $NBTD_t$: normal BTD in year t, all deflated by total assets.
(2) P-value is presented in parentheses using one-tail test.

Table 9.3 presents descriptive statistics and correlations for variables. The sample is reduced to 468 because of some missing data on stock prices. As with many prior studies (e.g. Easton and Harris 1991, Chen *et al.* 2001), $EPS_t$ and $\Delta EPS_t$ variables are strongly correlated with stock returns. $BTD_t$ exhibits higher correlations with $EPS_t$ and $\Delta EPS_t$ than with $RET_t$, suggesting $BTD_t$ might be associated with stock returns by affecting earnings levels and earnings changes. In particular, $NBTD_t$ are highly correlated with the variables of $EPS_t$ and $\Delta EPS_t$ at 0.60.

Panel A of Table 9.4 summarises the results of multiple regressions of return on deflated earnings, earnings changes and BTD for the pooled and yearly samples (Model 1). In the pooled regression, the Generalized Least Squares (GLS) estimates and White's method are used to correct for heteroscedasticity and autocorrelation problems. $EPS_t$ is significantly associated with return at the 0.01 level, with a t-statistic of 7.93. However, $\Delta EPS_t$ is insignificant at the conventional level. As expected, the coefficient for $BTD_t$ ( $\beta_3$ =-3.23, t=-2.62) is significantly negative at the 0.01 level, consistent with BTD being value relevant in the Chinese capital markets.

Panel A of Table 9.4 also reports the year-by-year regression results, where $EPS_t$ is positively significant at the 0.01 level in 3 of the 5 years, and $\Delta EPS_t$ is significant at the 0.05 level or better in 3 of the 5 years but one of them is negative. The coefficients for $BTD_t$ are significantly negative in 4 out of 5 years.

**Table 9.4**

**Results for Regression of Return on EPS, ΔEPS and BTD**

Panel A: $RET_i = \beta_0 + \beta_1 EPS_i + \beta_2 \Delta EPS_i + \beta_3 BTD_i + \varepsilon_i$ **(Model 1)**

| Year | N. | Intercept | $EPS_j$ | $\Delta EPS_i$ | $BTD_i$ | Adj.$R^2$ | Adj.$R^2$ [a] | Partial F-stat.[b] |
|---|---|---|---|---|---|---|---|---|
| ALL | 468 | 0.07* (1.93) | 2.80*** (7.93) | -0.17 (-0.50) | -3.23*** (-2.62) | 0.083 | 0.031 | 24.90*** |
| 2000 | 84 | 3.70*** (18.29) | -1.49 (-1.66) | 3.31** (2.48) | 19.27 (1.35) | 0.044 | 0.034 | 0.83 |
| 2001 | 99 | -0.29*** (-13.22) | -0.24 (-1.37) | 1.10*** (4.28) | -1.60** (-2.49) | 0.146 | 0.057 | 8.97*** |
| 2002 | 99 | -0.20*** (-12.94) | 1.41*** (3.95) | 0.03 (0.28) | -0.77** (-2.59) | 0.447 | 0.355 | 13.55*** |
| 2003 | 95 | -0.09*** (-3.18) | 2.55*** (6.92) | -0.23** (-2.06) | -5.16*** (-4.94) | 0.437 | 0.273 | 20.53*** |
| 2004 | 91 | -0.39*** (-9.86) | 2.39*** (5.69) | -0.08 (-0.31) | -7.83*** (-3.16) | 0.323 | 0.254 | 8.05*** |
| Mean [c] | | | (2.71)*** | (0.93) | (-2.37)** | | | |

Panel B: $RET_i = \alpha_0 + \alpha_1 EPS_i + \alpha_2 \Delta EPS_i + \alpha_3 ABTD_i + \alpha_4 NBTD_i + \varepsilon_i$ **(Model 2)**

| Year | N. | Intercept | $EPS_i$ | $\Delta EPS_i$ | $ABTD_i$ | $NBTD_i$ | Adj. $R^2$ |
|---|---|---|---|---|---|---|---|
| ALL | 468 | 0.06* (1.86) | 2.89*** (7.76) | 0.02 (0.05) | -1.51* (-1.65) | -3.70*** (-4.37) | 0.083 |
| 2000 | 84 | 3.72*** (18.72) | -1.73*** (-3.17) | 3.61** (2.49) | 7.85 (0.30) | 26.96 (1.64) | 0.037 |
| 2001 | 99 | -0.29*** (-13.28) | -0.18 (-1.13) | 1.14*** (5.71) | -1.11 (-1.60) | -1.69** (-2.42) | 0.152 |
| 2002 | 99 | -0.20*** (-12.61) | 1.41*** (3.85) | 0.03 (0.29) | -0.80*** (-2.86) | -0.74** (-1.99) | 0.441 |
| 2003 | 95 | -0.09*** (-3.15) | 2.49*** (6.69) | -5.44 (-1.29) | -4.30*** (-3.43) | -4.93*** (-4.45) | 0.441 |
| 2004 | 91 | -0.41*** (-8.96) | 2.53** (2.46) | 0.15 (0.17) | -5.44 (-1.30) | -9.89* (-1.69) | 0.327 |
| Mean [c] | | | (1.74)* | (1.47) | (-1.78)* | (-1.78)* | |

(1) *, ** and *** denotes the significance at the 0.1, 0.05 and 0.01 level using a two-tailed test. Figures in parentheses denote t-statistics. In yearly regressions, t-statistics are based on the heteroscedasticity-consistent covariance matrix (White 1980) in presence of heteroscedasticity or HAC-consistent covariance matrix (Newey and West 1987) in presence of auto-correlation. In pooled regression, GLS and heteroscedasticity-consistent covariance matrix are applied.

(2) Variables definitions:

$RET_t$: the return over the 12-months ending on April 30 following the end of fiscal year t; $EPS_t$: earnings per share in year t, deflated by stock price on April 30 following the end of fiscal year t-1; $\Delta EPS_t$: annual difference changes in earnings per share for period t deflated by stock price on April 30 following the end of fiscal year t-1; $BTD_t$: book-tax differences in year t; $ABTD_t$: abnormal BTD in year t; $NBTD_t$: normal BTD in year t, all deflated by total assets.

[a] These are the adjusted $R^2$s of benchmark model, where return is regressed on earnings levels and earnings changes.

[b] The partial F-statistics are used to test whether Model 1 has incremental explanatory power over the benchmark model.

[c] This is the mean of the yearly coefficients, estimated to test for the effect of cross-sectional correlation in the error terms.

Rayburn (1986) argues that the t-statistics from cross-sectional yearly regression may be seriously understated in some or all years due to cross-sectional correlation. Thus, she does not rely heavily on inferential statistics calculated in cross-section. She suggests an unbiased significance test by using the mean and standard errors of the coefficients obtained from the annual regressions. If the mean is statistically different from zero, then the significance levels of the coefficients are unlikely to be a result of cross-sectional correlation. Bernard (1987) further addresses the seriousness of inferential bias that arises in stock-return-based studies in such a context. He concludes that, for market-based accounting research involving cross-sectional regressions of quarterly or annual stock return metrics against firm-specific variables, the use of Ordinary Least Squares (OLS) may frequently lead to misstatement of significance level due to cross-sectional correlation. The magnitude of this bias may be most serious, and large enough to influence conclusions in the studies based on annual data. These issues indicate that statistical results in such a context should be interpreted cautiously.

As suggested in this literature, an across-years mean test is used to assess the bias in significance level of annual coefficients.[84] The result in the last row of Panel A shows that the means of the coefficients for EPS and BTD are significant different from zero (except for $\Delta$EPS), indicating the significance levels of coefficients in yearly regressions are not affected by standard error bias from cross-sectional correlation.

Table 9.4 also presents a comparison of the adjusted $R^2$s for Model 1 and the benchmark model where stock return is regressed on earnings levels and earnings changes. The result indicates that BTD is incrementally value relevant over earnings levels and earnings changes in pooled regression. The adjusted $R^2$ in Model 1 is 8.3%

[84] The 5 estimated slope coefficients from the yearly regressions are used to obtain an across-years mean, standard error, and t-statistic for each variable.

as compared to 3.1% in the benchmark model. The partial F-statistics are statistically significant at the 0.01 level in pooled regression and in 4 of the 5 yearly regressions. On average, BTD adds approximately 44% to the explanatory power (adjusted $R^2$) of earnings levels and earnings changes with respect to stock returns during 2000-2004.

To determine whether the value relevance of BTD is attributed to NBTD or ABTD or both, total BTD is replaced with NBTD and ABTD in the regression (Model 2). Panel B of Table 9.4 reports that both NBTD and ABTD are significantly associated with stock returns at the conventional level in pooled regression. The across-year means of the coefficients for NBTD and ABTD are also significantly correlated with stock returns. Hypothesis 8 is supported.

### 9.3.2 Additional Analyses

The reliability and rigor of statistical outcomes in the return model are tested using an alternative estimation of return, a different deflator, an industry control and for multicollinearity.

First, the market-adjusted cumulative abnormal return is used to replace the raw return as a dependent variable to test the association between BTD and stock returns, as in much prior literature. The cumulative abnormal return is calculated by subtracting the market return from the stock return monthly over the 12 months, ending on April 30 following the end of fiscal year t (Equation 7.10).

As shown in Table 9.5, BTD is significantly correlated with abnormal stock returns at the 0.10 level in pooled regression. The yearly regressions show that BTD is

significantly negative in 4 out of the 5 years. The results for other variables are largely unchanged and the model fit is much weaker than that in Table 9.4.

**Table 9.5**
**Regressions Result of Market-adjusted Cumulative Abnormal Return Model**

$CAR_i = \alpha_0 + \alpha_1 EPS_i + \alpha_2 \Delta EPS_i + \alpha_3 BTD_i + \varepsilon_i$ (Equation 7.8)

| Year | N | $\alpha_0$ | $\alpha_1$ | $\alpha_2$ | $\alpha_3$ | Adj.$R^2$ | F-statistics |
|---|---|---|---|---|---|---|---|
| ALL | 468 | 0.06<br>(0.80) | 1.75*<br>(1.75) | 0.76<br>(0.81) | -3.24*<br>(-1.68) | 0.002 | 1.27 |
| 2000 | 84 | 2.81***<br>(3.01) | -7.57*<br>(-1.82) | 15.90**<br>(2.59) | 71.34<br>(1.08) | 0.057 | 2.68* |
| 2001 | 99 | 2.70***<br>(3.72) | -25.63***<br>(-3.38) | 51.50***<br>(3.40) | -62.72***<br>(-3.52) | 0.144 | 6.49*** |
| 2002 | 99 | -0.34**<br>(-2.77) | 8.41***<br>(4.45) | -0.64<br>(-1.24) | -4.99***<br>(-3.07) | 0.320 | 16.38*** |
| 2003 | 95 | -2.19***<br>(-7.28) | 26.14***<br>(8.17) | -5.83***<br>(-5.22) | -38.93***<br>(-3.69) | 0.446 | 26.19*** |
| 2004 | 91 | -1.42***<br>(-3.86) | 17.03***<br>(4.46) | -2.14<br>(-0.92) | -41.07*<br>(-1.82) | 0.211 | 9.04*** |
| Mean [a] | | | (2.38)** | (-0.28) | (-2.20)** | | |

(1) *, ** and *** denotes the significance at the 0.1, 0.05 and 0.01 level using a two-tailed test. Figures in parentheses denote t-statistics. In yearly regressions, t-statistics are based on the heteroscedasticity-consistent covariance matrix (White 1980) in presence of heteroscedasticity or HAC-consistent covariance matrix (Newey and West 1987) in presence of auto-correlation. In pooled regression, GLS and heteroscedasticity-consistent covariance matrix are applied.
(2) Variables definitions:
CAR: the cumulative abnormal return, calculated monthly over the 12 months, ending April 30 following the end of fiscal year t. EPS: earnings per share in year t, deflated by stock price on April 30 following the end of fiscal year t-1; ΔEPS: annual difference changes in earnings per share for period t deflated by stock price on April 30 following the end of fiscal year t-1; BTD: book-tax differences in year t, deflating by total assets.
[a] This is the mean of the yearly coefficients, estimated to test for the effect of cross-sectional correlation in the error terms.

Second, the regression is re-estimated with BTD per share deflated by price in year t-1 instead of BTD deflated by total assets. As shown in Appendix 13, the previous results have no substantial changes in terms of the coefficient size and their significance levels.

Third, the regression is replicated with an industry control variable to account for industry effect. As reported in Appendix 14, the industry effect is not significant and this inclusion does not substantially change the previous results.

The prospect of multicollinearity is raised above where a larger bi-variate correlations of 0.60 between $\Delta EPS_t$ and $BTD_t$, $EPS_t$ and $BTD_t$ are observed in Table 9.1. The variance inflation factors and condition indices are calculated as suggested by Greene (2000). The result shows that the highest condition index is 2.91 and the highest VIF is 2.30, far below the benchmarks of multicollinearity.[85] Therefore, multicollinearity does not appear to be a material problem in the estimation of the model.

Overall, the regression outcomes as reported in Table 9.4 appear robust to these testes above. BTD and its components remains significantly negative association with stock returns.

## 9.4 Summary

This chapter provides support for the Hypothesis 8 which predicts that BTD is informative for equity valuation because it reflects the information about the differences between GAAP and tax laws, earnings management and tax management those have implications for the market's estimation of firms' future performance.

To test the value relevance of BTD, this study investigates the predictive abilities of BTD and its components for future earnings and their explanatory power for stock returns. Based on the significant association between BTD and future earnings, there

[85] For the yearly regression, no VIFs were above 3.

appears to be an economic justification that the information impounded in BTD is useful for investors to assess firms' future performance. A large NBTD informs the investors of a weak future performance because a large difference in tax and book reporting requirements may contribute a largely transitory component to current earnings. On the other hand, a large ABTD also bodes a poor performance in future years since it is indicative of less persistent earnings (i.e. a low earnings quality) resulting from a high degree of managerial manipulations. This information reflected by BTD improves the predictability of current earnings to future earnings in terms of institutional settings and earnings quality.

More importantly, this predictive information of BTD has been reflected in contemporaneous stock returns in the Chinese capital markets, consistent with the notion of predictive and valuation links in fundamental analysis research. BTD and its components are of incremental value relevance to investors. On average, BTD adds approximately 44% to the explanatory power of earnings levels and earnings changes with respect to stock returns during 2000-2004.

An overall conclusion as to this research will be fully discussed in Chapter 10.

# CHAPTER TEN

# CONCLUSION AND FUTURE RESEARCH

## 10.1 Overview of the Thesis

This thesis provides an in-depth study of BTD by examining the potential for BTD in indicating the extent of accounting-tax misalignment, earnings management and tax management, and predicting firms' future earnings and stock returns in China.

Motivated by the potential but largely overlooked usefulness of BTD in proxying unobservable earnings management and tax management and earnings quality, and the research gaps in the BTD, earnings management, tax management and value relevance literature, this thesis attempts to advance existing literature by thoroughly exploring the informativeness and implications of BTD from a theoretical perspective and demonstrating the usefulness of BTD from an empirical perspective. It seeks to answer the following research questions: (1) Can observable BTD proxy earnings management and tax management after controlling for accounting-tax misalignment? (2) To what extent is variation in BTD associated with earnings management and tax management incentives? (3) Is the information embedded in BTD sufficient to make BTD value relevant?

To date, the pervasive earnings manipulations, tax shelters and accounting scandals have induced researchers to embark on comprehensive studies of the factors behind the BTD (e.g. McGill and Outslay 2004, Department of the Treasury 1999, Plesko 2004). While lower earnings quality and the resultant impairment of the value

relevance of accounting information have captured the attention of the financial analysts, investors, government regulators and legislators, the questions of how to detect management manipulations and to assess the reliability of financial variables have been empirical issues. If BTD can be indicative of the existence and degree of EM and TM, it should be a good indicator of earnings quality and incrementally informative for stock prices.

However, as illustrated in Chapters 2 and 3, most relevant BTD studies have some limitations due to measurement error in BTD and inadequate understanding of the information impounded in BTD. Most of these studies assume that BTD is a result of either institutional arrangements or opportunistic behaviours, but not both. This drawback leads to empirical bias and leaves their conclusions open to further investigation. To remedy the weaknesses in existing theoretical and empirical work, this thesis incorporates both mechanical and opportunistic differences and constructs a theoretical framework in Chapter 4, in which BTD is interpreted as a function of accounting-tax misalignment, earnings management and tax management. Consequently, BTD is argued to be an appropriate measure of EM and TM after controlling for the effect of accounting-tax misalignment and so may signify the earnings quality. The information embedded in BTD is predicted to be potentially value relevant because it may inform the market about some transitory effects of current earnings in terms of institutional settings and earnings quality, aiding investors to precisely evaluate and forecast firms' future performance and hence affecting share returns.

The framework decomposes total BTD into normal and abnormal components. NBTD is defined as the mechanical differences due to the divergent reporting rules for book and tax purposes, proxying the gap of accounting and tax reporting. ABTD is

defined as the opportunistic differences due to the managerial choices in accounting and tax reporting, thus proxying EM and TM.

Because both NBTD and ABTD are not observed directly, this thesis develops a linear cross-sectional regression model to identify these two indicator measures in Chapter 7. NBTD is estimated by regressing reported BTD on investment in fixed and intangible assets, changes in revenues and changes in tax loss position. It is measured by using the estimated coefficients in the fitted equation based on the successive year and manufacturing and non-manufacturing portfolios. ABTD is estimated as the residual from the expectation model. Assuming NBTD and ABTD are reliably measured, the estimated ABTD may be used to proxy the extent of EM and TM and to signify the levels of noise in reported financial information (i.e. earnings quality).

This framework is empirically tested by examining the association of ABTD with proxies for EM and TM incentives, and the association of BTD (NBTD and ABTD) with future earnings and stock returns in the Chinese context. Building on the detailed analysis of China's BTD in terms of institutional settings and opportunistic context in Chapter 5, Chapter 6 of this thesis develops some testable hypotheses that firms with strong incentives for EM and TM have high levels of ABTD in the Chinese context. The empirical results in Chapter 8 show that the estimated ABTD is positively associated with most of variables of incentives for EM and TM, interpreting this as evidence that ABTD being indicative of EM and TM. A naïve proxy for ABTD is also used to evaluate the robustness of the conceptual design, with similar but slightly weaker results.

The evidence in Chapter 9 also supports the conceptual development that BTD and its components are value relevant as they provide additional information to the market that have implications for performance forecast and equity valuation. The

negative association between ABTD and future earnings and stock returns is consistent with lower (higher) earnings quality having poorer (better) future earnings and stock returns. BTD exhibits incremental explanatory power over current earnings to future earnings and it is incrementally informative for stock prices beyond earnings levels and earnings changes.

The findings in this thesis enrich the knowledge of BTD and extend its implications for the future EM, TM and value relevance research. They contribute to the existing literature by introducing a new measure of EM and TM and a potential indicator of earnings quality. The remainder of this chapter summarises the detailed research results and their implications for theory and practice, followed with the discussion about limitations and future research in Section 10.3.

## 10.2 Summary of Findings and Implications

This dissertation is believed to be one of the first studies in examining the ability of BTD in proxying *both* EM and TM. It is also believed to be one of the first studies to examine the value relevance of BTD in terms of its information about institutional arrangements and earnings quality.

This section summarises the research findings and their implications for theory and practice in two parts. The first is related to ABTD and managerial manipulations. The second pertains to the association of BTD with performance measurement and share valuation.

### 10.2.1 ABTD, an Indicator of Earnings Management and Tax Management

The conceptual framework argues that ABTD is an appropriate indictor of potential EM and TM. If it is correct, there should be a significant association between ABTD and the incentives and opportunities for EM and TM. Using the data obtained from Chinese B-shares listed firms' English-version financial statements, Chapter 8 examines the association between ABTD and the incentives for managerial manipulations based on manufacturing and non-manufacturing portfolios. As expected, the result indicates that ABTD is positively related to most of the incentives for EM and TM. Firms with more incentives and likelihood for TM (e.g. firms with a high tax rate, tax loss utilised) and EM (e.g. loss firms, SOE firms) present a larger level of ABTD. This finding extends prior literature by providing evidence of the opportunistic causes of BTD, and to what extent these causes contribute to BTD. More importantly, unlike prior BTD studies that investigate EM (TM) conditional on the absence of TM (EM), this study incorporates both of EM and TM together and provides evidence that ABTD is a useful proxy for combined EM and TM.

The results also indicate that the industry characteristics affect the magnitude of firms' EM and TM behaviour (as proxied by ABTD). For example, manufacturing firms with tax holidays exhibit less tax planning than non-manufacturing firms with tax holidays, perhaps because of the relative difficulty for non-manufacturing to obtain tax preference. Manufacturing firms have a larger extent of earnings manipulation than non-manufacturing when making seasoned equity offerings or successive book losses. This may be due to manufacturers finding it easier to manage earnings because they have more discretion in accounting choices (e.g. choices in depreciation, cost allocation and asset valuation) and more channels to manage earnings by real transactions (e.g. arrangements in manufacturing chains and products flow).

The size effect on managerial manipulations, as proxied by ABTD, also varies across manufacturers and non-manufacturers. Large firms as measured by total assets have a larger (less) extent of tax planning for manufacturing (non-manufacturing). This finding adds to prior literature pertaining to the association between firm size and management manipulations.

These results may provide researchers and regulators with more insights into EM and TM behaviour. In response, tax authorities and audit firms may perform an efficient and effective auditing by focusing on firms with larger ABTD.

### 10.2.2 The Value Relevance of BTD

Based on the predictive and valuation links in the fundamental analysis research, this thesis demonstrates that BTD and its components are informative for stock returns in the Chinese capital markets. The possible value relevance of BTD lies in its usefulness in forming expectations regarding future performance. The results from one-year-ahead earnings regression model suggest that the information impounded in BTD is useful for the analysts and investors to evaluate firms' future performance. BTD has incremental explanatory power to future earnings over current earnings. A large NBTD informs the investors of a weak future performance because a large difference in tax and book reporting requirements may contribute a largely transitory component to current earnings. On the other hand, a large ABTD also bodes a poor performance in future years since it is indicative of less persistent earnings (i.e. a low earnings quality) resulting from a high degree of managerial manipulations. This is consistent with the conceptual framework developed in Chapter 4.

The evidence from both the raw return model and CAR model shows that BTD and its components are negatively associated with contemporaneous stock returns. BTD provides incremental explanatory power to stock returns over earnings levels and earnings changes in the Chinese capital markets. These findings extend the prior literature by providing direct evidence of the value relevance of BTD in terms of its information about institutional arrangements and earnings quality.

Numerous studies argue that managerial manipulations reduce the quality of financial variables and weakens their value relevance as reflected in share prices (e.g. Barth *et al.* 1996, Christensen *et al.* 1999, Marquardt and Wiedman 2004). The value relevance of ABTD indicates that ABTD, as a proxy for EM and TM, informs the market of some additional information about managerial manipulations, suggesting that it is a signal of earnings quality. A Large ABTD is interpreted as a "red flag" of low earnings quality, thereby reducing the investors' expectation of future performance and leading to a low share return. Therefore, the analysts and investors should search for BTD information other than current earnings while assessing the firm value.

Finally, from a policy perspective, the findings in this thesis regarding the informativeness and usefulness of BTD may contribute to the current debate about accounting-tax misalignment issue in countries without BTD and accounting-tax alignment issues in countries with BTD.

## 10.3 Limitations and Future Research

This section addresses some limitations in this thesis and discusses future research in terms of the generalisation and application of conceptual and empirical results which relate to an extended study in countries with different institutional settings

and managerial practice, a broad application of BTD in the EM/TM research, the refinement of research design by using a large sample size and a finer industry distribution and improving model specification, a deep examination as to the interaction and trade-offs of EM and TM, and a further investigation of NBTD.

### 10.3.1 The Generalisation and Application of Conceptual and Empirical Results

This thesis constructs the theoretical framework of BTD built on a broad-based review of literature in the fields of BTD, earnings management, tax management and value relevance studies. Most of these studies are conducted in the developed countries, such as the U.S., UK, Canada and Australia. As a result, the conceptual framework and design should be adaptable and generalised to these countries. These generalisation and application will provide various research avenues. For example, how to use BTD proxy to detect the potential EM and TM and measure earnings quality? How does BTD proxy relate to discretional accruals estimates of EM and effective tax rate estimates of TM? Is BTD proxy more powerful? Whether may the application of BTD enhance the detection of unobservable but pervasive management manipulations and deepen the studies in EM/TM? How to further separate BTD into that reflecting earnings management versus tax aggressiveness?

The evidence drawn from China supports the conceptual development that BTD is a useful measure of potential EM and TM. The representativeness of empirical results, however, may be subject to some unique institutional settings and opportunistic incentives in a Chinese context. This is unavoidable because accounting and tax rules and market practice differ from each country. As a result, the further research would be to replicate the study in countries which may provide different jurisdictional background,

managerial discretion, incentives and opportunities for EM and TM. This should enrich and supplement this work.

### 10.3.2 The Potential Effects of Sample Size and Industry Distribution

As shown in Chapter 7, this study uses a sample of all Chinese B-shares firms listed on either Shanghai or Shenzhen Stock Exchanges for the period from 1999 to 2004. After applying the selection criteria, the final firm-year observation set is 574. This relatively small sample size and short observation period raise the potential impact on normality distribution of samples (Section 7.3) and mixed industry effects (Section 8.3). Although this limitation is inevitable, an extended sample size and observation period should diminish the detrimental effects of non-normality and provide more opportunities to investigate firms' behaviour. Given that broad industry differences have been found, richer results will be obtained if it is possible to control for industry effect in a finer industry basis.

### 10.3.3 The Observability Problems and Measurement Issues

One limitation in BTD proxy is that BTD can not reflect one of the EM/TM strategies in which earnings and taxable income (taxes) are managed in a same direction and in a same amount (see Footnote 17 in Chapter 4). This is because this strategy does not raise the variation in BTD.

In addition, this study employs a cross-sectional OLS model to estimate unobservable NBTD and ABTD. NBTD is estimated by regressing BTD on factors associated with NBTD and ABTD is estimated as the residual. Although a naïve proxy for ABTD is used to benchmark this conceptual design and shows a similar result to

regression-based ABTD, the problem of model misspecifications as shown in Jones' model may also exist in this design and so may affect the measurement of ABTD. As a result, future research is needed to refine the model by controlling for the factors those may contribute to NBTD so as to purify the ABTD measure as possible as it can.

### 10.3.4 The Interaction and Trade-Offs of EM and TM

As argued in Chapter 4, ABTD is a result of EM and TM strategies and their interaction. This study tests this proposition by using the orthogonal indicator variables of incentives for EM and TM to explain the variation in ABTD. The unexplained portion (residual) may be attributed to the interaction of EM and TM. Another avenue for future research is to investigate the interaction of EM and TM behaviour and how their trade-offs affect management opportunistic strategies.

### 10.3.5 A Further Investigation of NBTD

The nonconformity between accounting and tax reporting rules is not a new issue in the Western developed countries. However, how to evaluate the extent of accounting-tax misalignment among different countries is vague. Prior international accounting research, such as Alford *et al.* (1993) and Ali and Hwang (2000) use the items of different requirements in accounting and tax rules in a specific country as a proxy for its level of misalignment. This study provides a definition and approach to identify NBTD and ABTD. The estimated NBTD allows researchers to directly compare the extent of accounting-tax misalignment in different countries and to analyse the changes in accounting-tax nonconformity in a particular country across time. Given the research questions addressed in Chapter 1, this study focuses on ABTD and poses a limited analysis of NBTD. A further investigation on NBTD may provide additional

insights into accounting role and standard settings, especially for international accounting research.

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## APPENDIX 1

### The Development of Chinese Accounting Regulatory Framework of Financial Reporting and BTD

| | Main regulations | Regulator | Applicable enterprises | Main Content |
|---|---|---|---|---|
| BTD appears | The Accounting Law (1985) | National People's Congress | All enterprises | General principles and definitions |
| | Accounting Regulations for Joint Ventures Using Chinese and Foreign Investment (1985) | Ministry of Finance | Joint Ventures | Concepts of assets, liabilities, capital, revenue and expenses |
| | Accounting System for Experimental Joint Stock Limited Enterprises (1992) | Ministry of Finance | Joint stock limited enterprises (JSLE) | To standardise accounting practices and disclosures by listed companies. |
| | Accounting Regulations for Enterprises with Foreign Investment (1992) | Ministry of Finance | Enterprises with Foreign Investment | Foreign exchange transactions, recognition of possible losses in inventory and accounts receivables |
| | General Financial Principles for Enterprises (GFPE) (1993) | Ministry of Finance | All enterprises | General principles |
| | Accounting Standards for Business Enterprises-Basic Standard (ASBE) (1993) | Ministry of Finance | All enterprises | Definitions of the elements of financial statements, the structure, qualitative characteristics and assumptions. Accounting treatments were allowed to differ from the requirements of tax regulations |
| BTD increases | Industry Specific Accounting Systems (1996) | Ministry of Finance | All enterprises | Detailed standards provide a practical direction for accounting application |
| | Chinese Operational Accounting Standards (1997-2002) | Ministry of Finance | All enterprises | Detailed operational standards and the justifications for accounting choices |
| | Accounting System for Business Enterprises (new ASBE) for LSLE 2001, for FIE 2002 | Ministry of Finance | Joint stock limited enterprises (JSLE) and Foreign investment enterprises | More discretion for management, timing differences and permanent differences are defined |

**Source: Chinese GAAP**

## APPENDIX 2

### The Tax-Effect BTD Calculated from the Reconciliation of Prima Facie Income Tax Expense and Income Tax Payable in China's B-shares Listed Firms' English-Version Financial Reports

***Prima Facie Income Tax Expense*** = pre-tax accounting profit x applicable tax rate (ATR)

±*Tax effect of permanent difference* (i.e. permanent differences x ATR)

e.g. +Tax rate differential

+ Share of taxation of associated companies

+ Non-deductible expenses

+ Under-provision in previous years

+Tax effect of timing difference not brought to account (e.g. tax loss not recognised as deferred tax expense)

+ Overseas profit tax

+ Others

- Effect of tax preferential period (eg. Tax holidays)

- Tax loss utilised

- Non-taxable income

- Over-provision in previous years

- Tax refund

= ***Income tax expense*** charged in profit and loss account

±*Tax effect of timing differences brought to account* (i.e. timing difference x ATR)

= ***Income Tax Payable*** (**or *the Provision for PRC Income Tax***)

= Estimated taxable income x ATR

***Taxed-effect BTD*** = Prima Facie Income Tax Expense – Income Tax Payable

## APPENDIX 3

## An Illustration of How Tax-Induced Income Shifting Affects Tax-Effect BTD

This Appendix explains that how consolidated and separate entity income reporting raise the variation of tax-effect BTD and illustrates that how tax-induced income shifting strategy affects the variation of tax-effect BTD.

Under the Chinese income tax law, income tax should be calculated on an independent legal entity base despite the consolidating requirements in accounting standards. This institutional distinction raises tax-effect BTD (normal BTD). Assume that a consolidated entity A has $600 pre-tax income for itself and $2000 consolidated pre-tax income in year t, and it has 3 subsidiaries called B, C and D. Their pre-tax income and applicable tax rates are $400, $500 and $500, 24%, 33% and 10%, respectively. The applicable tax rate for the consolidated entity is 15%. Assume no other adjusted items, A's income tax payable is calculated as follows:

***Prima Facie Income Tax Expense***: 2000*15% = 300
Plus: tax rate differential: 36+90-25 = 101
A company: 600*(15%-15%) = 0
B company: 400*(24%-15%) = 36
C company: 500*(33%-15%) = 90
D company: 500*(10%-15%) = -25
Income Tax Expense = 401
Income Tax Payable = 401
***Tax-based BTD*** = 300 – 401 = -101 (NBTD = -101, ABTD = 0)

Holding others constant, if A shifts the pre-tax profit from B and C to D as follows, A's total income tax payable is reduced though the consolidated pre-tax profit is unchanged:

***Prima Facie Income Tax Expense***: 2000*15% = 300
Plus: tax rate differential: 18+18-60 = -24
A company: 600*(15%-15%) = 0
B company: 200*(24%-15%) = 18
C company: 100*(33%-15%) = 18
D company: 1200*(10%-15%) = -60
Income tax expense = 276

Income tax payable = 276

***Tax-effect BTD*** = 300-291 = 24 (NBTD = -101, ABTD = 125)

As a result, listed firms can exploit the different reporting methods (i.e. consolidated reporting and separate entity reporting) to save tax. When the institutional distinction is constant, i.e. NBTD is unchanged, income-shifting tax strategy in a consolidated group can reduce tax burden without affecting total reported income. This behaviour can be reflected in the tax-effect BTD (i.e. ABTD).

## APPENDIX 4

## An Illustration of Tax Loss Effects on BTD

A tax loss incurs when deductible expenses exceed taxable revenue. Under the Chinese income tax laws, a firm with a tax loss can get a tax benefit in form of carryforward which reduces tax payment in the following profitable year.[1] The tax loss carryforward is an exception to the general income tax rules that the taxable income is determined on the basis of the current year's events. When tax loss is utilised, a company can offset the preceding year's tax losses against the current year's taxable income and hence results in a higher BTD. However, when a tax loss occurs, taxable income is recognised as zero despite its real value and hence leads to a lower BTD.

Assume that a firm has pre-tax income of $300, -$200, $150, and $800 in years 1, 2, 3, and 4, respectively, its "taxable" income in each of the four year is $100, -$400, -$50, and $600, respectively.[2] If the income-effect BTD is $200 in each year, permanent difference is $50 and timing difference is $150, and the tax rate is 40%, then tax-effect of BTD is $80 with the tax-effect of the permanent and timing differences being $20 and $60 respectively. Assume all NOL can be carried forward.

**If tax loss is brought to account as a deferred tax asset or future income tax benefit:**

Tax expense = Accounting income x Tax rate – Tax effect of permanent differences

Deferred tax expense = Tax effect of regular timing differences – Future income tax benefit from tax losses recognised as an asset

Tax payable = Taxable income x Tax rate (or Tax expense – Deferred tax expense)

Tax-effect BTD = Tax effect of regular BTD – Future income tax benefit recognised as an asset

**Year 1:**

Tax expense = $300 x 40% −20 = 100

Deferred tax expense = 60

Tax payable = 100 x 40% = 40

Tax-effect BTD = 80-0 = 80

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[1] The Chinese Income Tax Law only permits NOL to be carried forward in the following five years commencing from the first profitable year.

[2] Here, taxable income is the number reported by taxpayers in financial reports instead of on tax returns.

**Year 2**:

Tax expense= -200 x 40% – 20 = -100

Deferred tax expense = 60 – 400 x 40% = -100

Tax payable = 0 x 40% = 0 or -100 – (-100) = 0

Tax-effect BTD = 80 – 160 = -80

Thus, the tax-effect BTD (hence BTD) decreases when tax loss occurs (BTD is -80 instead of the regular +80). This happens because tax laws treat taxable income and tax loss asymmetrically.

**Year 3**:

Tax expense =150 x 40% – 20 = 40

Deferred tax expense = 60-50 x 40% = 40

Tax payable = 0 x 40% = 0 or 40-40 = 0

Tax-effect BTD = 80 – 20 = 60

**Year 4**:

Tax expense = 800 x 40% – 20 = 300

Deferred tax expense = 60+450 x 40% = 240

Tax payable = (600-400-50) x 40% = 60 or 300-240 = 60

Tax-effect BTD = 80+180 = 260

Thus, tax-effect BTD increases when tax loss is utilised (BTD is 260 instead of the regular 80). This happens because tax loss utilised reduces current year's taxable income.

**If tax loss is NOT brought to account as a deferred tax asset or FITB:**

The tax effect of the tax loss is not recognised as a timing difference, so it becomes a permanent difference. Thus:

Tax expense = Accounting income x Tax rate – Tax effect of permanent differences (the regular one and the additional from tax losses)

Deferred tax expense = tax effect of regular timing difference

Tax payable = Taxable income x Tax rate (or Tax expense – Deferred tax expense)

Tax-effect BTD = Tax effect of regular BTD + Tax effect of additional permanent difference due to tax losses

**Year 1:**

Tax expense = $300 x 40% −20 =100

Deferred tax expense = 60

Tax payable = 100 x 40% = 40 or 100−60 = 40

Tax-effect BTD = 80-0 = 80

**Year 2**:

Tax expense = -200 x 40% – 20 – (-400 x 40%) = 60

Deferred tax expense = 60

Tax payable= 0 x 40% = 0 or 60 – 60 = 0

Tax-effect BTD = 80 – 160 = -80

**Year 3**:

Tax expense=150 x 40% – 20 – (-50 x 40%) = 60

Deferred tax expense=60

Tax payable= 0 x 40% = 0 or 60 - 60 = 0

Tax-effect BTD = 80 – 20 = 60

**Year 4**:

Tax expense=800 x 40% – 20 – (450 x 40%) = 120

Deferred tax expense=60

Tax payable= (600-400-50) x 40%= 60 or 120 – 60 = 60

Tax-effect BTD = 80+180 = 260

Again, the tax-effect BTD decreases when NOL occurs. It increases when NOL is utilised in future periods.

Thus, tax loss affects the distribution of the tax-effect BTD even though the aggregate tax-effect BTD for four years is unchanged (i.e. 320). The current tax-effect BTD is reduced when the tax loss occurs (e.g. in year 2 and year 3) and is increased when tax loss is utilised (i.e. in year 4).[3]

[3] I acknowledge Dr Alfred Tran for his comments on this issue.

## APPEDIX 5

## Result for Pooled BTD Regression

$$BTD_{it} = \beta_0 + \beta_1 INV_{it} + \beta_2 \Delta REV_{it} + \beta_3 NOL_{it} + \beta_4 TLU_{it} + \varepsilon_{it} \quad \text{(Equation 7.1)}$$

| Coefficients | Manufacturing | Non-Manufacturing |
|---|---|---|
| Intercept ($\beta_0$) | 0.000<br>(0.788) | -0.002<br>(0.00) |
| INV ($\beta_1$) | 0.001**<br>(0.02) | 0.002***<br>(0.000) |
| ΔREV($\beta_2$) | -0.001***<br>(0.00) | -0.002***<br>(0.00) |
| NOL($\beta_3$) | -0.186***<br>(0.00) | -0.136***<br>(0.00) |
| TLU($\beta_4$) | 0.799***<br>(0.00) | 0.869***<br>(0.00) |
| Adjusted $R^2$ | 0.67 | 0.84 |
| F-statistic | 154.08<br>(0.00) | 174.51<br>(0.00) |
| Sample | 304 | 132 |

Note:
(1) *,**, and ***denote the significance of two-tailed tests at the level of 0.01, 0.05 and 0.10. Figures in parentheses denote the p-values for T-statistics and for F-statistics based on the heteroscedasticity-consistent covariance matrix (White, 1980) and GLS.
(2) The sample includes 304 firm-years for manufacturing and 132 firm-years for non-manufacturing for 1999-2003.
(3) Variables Definitions
BTD: reported book-tax differences for firm j in year t. INV: the sum of gross property, plant and equipment and intangible assets in year t, and proxies for investment growth. ΔREV: changes in revenue from year t-1 to year t, proxies for economic growth. NOL: the value of accounting loss, proxies for tax loss. TLU: reported tax loss utilised for firm in year t. All variables are deflated by total assets.

## APPENDIX 6

### Results of Sensitivity Tests for EM and TM Model with the Quadratic Function

$$ABTD = \alpha_0 + \alpha_1 ATR + \alpha_2 Number + \alpha_3 Number^2 + \alpha_4 TAXH + \alpha_5 TLU + \alpha_6 SEON + \alpha_7 SOE + \alpha_8 Loss + \alpha_9 Loss1 + \alpha_{10} Loss2 + \alpha_{11} Y2001 + \alpha_{12} Y2002 + \alpha_{13} Y2003 + \varepsilon$$

| | Predicted Sign | Incentives for EM or TM | (1) Manufacturing | (2) Non-manufacturing |
|---|---|---|---|---|
| Intercept | ? | | 0.0046 | -0.0073 |
| | | | (5.35)*** | (-3.53)*** |
| ATR | + | TM | 0.0003 | 0.0001 |
| | | | (15.91)*** | (3.79)*** |
| Number | + | TM | -0.0055 | 0.0036 |
| | | | (-20.71)*** | (3.30)*** |
| Number$^2$ | – | TM | 0.0005 | -0.0006 |
| | | | (13.18)*** | (-3.26)*** |
| TAXH | + | TM | -0.0005 | 0.0003 |
| | | | (-2.52)*** | (0.64) |
| TLU | + | TM | 0.0126 | 0.0029 |
| | | | (68.80)*** | (2.21)*** |
| SEON | + | EM | 0.0033 | -0.0016 |
| | | | (5.38)*** | (-2.68)*** |
| SOE | + | EM | 0.0035 | 0.0059 |
| | | | (4.80)*** | (6.97)*** |
| LOSS | + | EM | 0.0031 | 0.0083 |
| | | | (11.24)*** | (5.02)*** |
| LOSS1 | + | EM | 0.0010 | 0.0005 |
| | | | (2.52)*** | (0.38) |
| LOSS2 | + | EM | 0.0211 | -0.0008 |
| | | | (3.45)*** | (-0.99) |
| Y2001 | ? | | -0.0024 | -0.0004 |
| | | | (-10.80*** | (-0.78) |
| Y2002 | ? | | -0.0017 | 0.0017 |
| | | | (-6.74)*** | (3.60)*** |
| Y2003 | ? | | 0.0127 | -0.0008 |
| | | | (41.11)*** | (-1.62)* |
| Adj. $R^2$ | | | 79.59% | 6.94% |
| F-statistic | | | 79.61 | 1.66 |
| | | | (0.000) | (0.081) |
| Sample | | | 263 | 116 |

Note:
(1) *,** and *** denotes the significance of one-tailed t-tests at the level of 10%, 5% and 1%. Figures in parentheses denote t-statistics based on the heteroscedasticity-consistent covariance matrix (White, 1980) and GLS.
(2) Variables definitions:
ABTD = absolute value of abnormal BTD;
ATR = applicable tax rate;
Number = the number of different applicable tax rates in a consolidated entity;
Number$^2$ = the squared term of Number;
TAXH= dummy variable that equals 1 when a consolidated entity has a member company with a tax holiday, and 0 otherwise;

TLU = dummy variable that equals 1 when a consolidated entity has tax-loss utilised, and 0 otherwise;
SEON = dummy variable that equals 1 when a consolidated entity has rights issuing or public offering in the next year, and 0 otherwise;
SOE = dummy variable that equals 1 when a consolidated entity whose largest shareholder is the State, and 0 otherwise;
LOSS = dummy variable that equals 1 when a consolidated entity is loss in the current year t but not in t-1, and 0 otherwise;
LOSS1= dummy variable that equals 1 when a consolidated entity is loss in year t-1 not in t-2, and 0 otherwise;
LOSS2= dummy variable that equals 1 when a consolidated entity has losses in both t-1 and t-2, and 0 otherwise;
Y2001=dummy variable that takes 1 when it is in the year 2001 and 0 otherwise;
Y2002= dummy variable that takes 1 when it is in the year 2002 and 0 otherwise;
Y2003= dummy variable that takes 1 when it is in the year 2003 and 0 otherwise.

## APPENDIX 7

### Results of Sensitivity Tests for EM and TM Model with TAXH*Number

$$ABTD = \alpha_0 + \alpha_1 ATR + \alpha_2 Number + \alpha_3 Number * TAXH + \alpha_4 TAXH + \alpha_5 TLU + \alpha_6 SEON + \alpha_7 SOE + \alpha_8 Loss + \alpha_9 Loss1 + \alpha_{10} Loss2 + \alpha_{11} Y2001 + \alpha_{12} Y2002 + \alpha_{13} Y2003 + \varepsilon$$

| | Predicted Sign | Incentives for EM or TM | (1) Manufacturing | (2) Non-manufacturing |
|---|---|---|---|---|
| Intercept | ? | | -0.0024 | -0.0034 |
| | | | (-3.63)*** | (-2.37)*** |
| ATR | + | TM | 0.0003 | 0.0001 |
| | | | (11.28)*** | (3.60)*** |
| Number | + | TM | -0.0020 | -0.0007 |
| | | | (-7.28)*** | (-2.51)*** |
| TAXH*Number | ? | TM | 0.0012 | 0.0013 |
| | | | (3.73)*** | (3.53)*** |
| TAXH | + | TM | -0.0035 | -0.0023 |
| | | | (-4.23)*** | (-2.06)** |
| TLU | + | TM | 0.0093 | 0.0040 |
| | | | (23.55)*** | (3.10)*** |
| SEON | + | EM | 0.0033 | -0.0011 |
| | | | (5.56)*** | (-2.31)** |
| SOE | + | EM | 0.0077 | 0.0068 |
| | | | (13.85)*** | (9.05)*** |
| LOSS | + | EM | 0.0007 | 0.0118 |
| | | | (2.34)*** | (10.16)*** |
| LOSS1 | + | EM | -0.0002 | 0.0009 |
| | | | (-0.41) | (0.95) |
| LOSS2 | + | EM | 0.0210 | -0.0009 |
| | | | (3.54)*** | (-1.30)* |
| Y2001 | ? | | -0.0009 | 0.0004 |
| | | | (-3.59)*** | (0.93) |
| Y2002 | ? | | -0.0008 | 0.0022 |
| | | | (-2.61)*** | (5.20)*** |
| Y2003 | ? | | 0.0120 | -0.0002 |
| | | | (30.29)*** | (-0.49) |
| Adj. $R^2$ | | | 51.07% | 32.35% |
| F-statistic | | | 22.04 | 5.23 |
| | | | (0.000) | (0.000) |
| Sample | | | 263 | 116 |

(See Appendix 6 for variables definitions)

## APPENDIX 8

### Results of Sensitivity Tests for EM and TM Model with Number*Profit

$$ABTD = \alpha_0 + \alpha_1 ATR + \alpha_2 Number + \alpha_3 Number * Profit + \alpha_4 Profit + \alpha_5 TAXH + \alpha_6 TLU + \alpha_7 SEON + \alpha_8 SOE + \alpha_9 Loss + \alpha_{10} Loss1 + \alpha_{11} Loss2 + \alpha_{12} Y2001 + \alpha_{13} Y2002 + \alpha_{14} Y2003 + \varepsilon$$

| | Predicted Sign | Incentives for EM or TM | (1) Manufacturing | (2) Non-manufacturing |
|---|---|---|---|---|
| Intercept | ? | | 0.003 | -0.0017 |
| | | | (0.801) | (-0.58) |
| ATR | + | TM | 0.0003 | 0.0001 |
| | | | (20.46)*** | (3.89)*** |
| Number | + | TM | -0.0038 | 0.0005 |
| | | | (-2.99)*** | (0.39) |
| Profit | + | TM | -0.013 | -0.0013 |
| | | | (-3.13)*** | (-0.57) |
| Number*Profit | + | TM | 0.0035 | -0.0004 |
| | | | (2.74)*** | (-0.34) |
| TAXH | + | TM | 0.0001 | 0.0007 |
| | | | (0.61) | (1.76)* |
| TLU | + | TM | 0.0129 | 0.0043 |
| | | | (25.82)*** | (3.48)*** |
| SEON | + | EM | 0.0015 | -0.0018 |
| | | | (3.36)*** | (-3.90)*** |
| SOE | + | EM | 0.0087 | 0.0055 |
| | | | (23.77)*** | (8.39)*** |
| LOSS | + | EM | -0.0039 | 0.0052 |
| | | | (-1.99)** | (2.93)*** |
| LOSS1 | + | EM | -0.0003 | 0.0001 |
| | | | (-0.80) | (0.18) |
| LOSS2 | + | EM | 0.0192 | -0.0018 |
| | | | (2.72)*** | (-2.87)*** |
| Y2001 | ? | | 0.0001 | 0.0001 |
| | | | (0.27) | (0.26) |
| Y2002 | ? | | -0.0011 | 0.0020 |
| | | | (-5.59)*** | (4.37)*** |
| Y2003 | ? | | 0.0112 | -0.0005 |
| | | | (37.63)*** | (-1.10) |
| Adj. $R^2$ | | | 54.63% | 7.55% |
| F-statistic | | | 23.53 | 1.67 |
| | | | (0.000) | (0.074) |
| Sample | | | 263 | 116 |

Note:
Profit = dummy variable that equals 1 when a consolidated entity is profitable in year t, and 0 otherwise;
See Appendix 6 for other variables definitions.

## APPENDIX 9

### Results of Sensitivity Tests for EM and TM Model with Size Variable

$$ABTD = \alpha_0 + \alpha_1 ATR + \alpha_2 Number + \alpha_3 TAXH + \alpha_4 TLU + \alpha_5 SEON + \alpha_6 SOE + \alpha_7 Loss + \alpha_8 Loss1 + \alpha_9 Loss2 + \alpha_{10} Size + \alpha_{11} Y2001 + \alpha_{12} Y2002 + \alpha_{13} Y2003 + \varepsilon$$

| | Predicted Sign | Incentives for EM or TM | (1) Manufacturing | (2) Non-manufacturing |
|---|---|---|---|---|
| Intercept | ? | | -0.0207 | 0.0463 |
| | | | (-11.79)*** | (5.71)*** |
| ATR | + | TM | 0.0003 | 0.0001 |
| | | | (14.52)*** | (2.59)*** |
| Number | + | TM | -0.0018 | 0.0007 |
| | | | (-13.08)*** | (3.52)*** |
| TAXH | + | TM | -0.0009 | 0.0010 |
| | | | (-3.92)*** | (2.07)** |
| TLU | + | TM | 0.0136 | 0.0055 |
| | | | (43.45)*** | (3.47)*** |
| SEON | + | EM | 0.0026 | -0.0007 |
| | | | (6.71)*** | (-1.51)* |
| SOE | + | EM | 0.0050 | 0.0008 |
| | | | (7.77)*** | (1.07) |
| LOSS | + | EM | 0.0011 | 0.0081 |
| | | | (3.44)*** | (8.31)*** |
| LOSS1 | + | EM | -0.0004 | 0.0009 |
| | | | (-0.86) | (0.85) |
| LOSS2 | + | EM | 0.0209 | -0.0045 |
| | | | (3.35)*** | (-5.99)*** |
| Size | ? | TM | 0.0032 | -0.0072 |
| | | | (11.44)*** | (-6.28)*** |
| Y2001 | ? | | -0.0018 | 0.0013 |
| | | | (-9.27)*** | (2.24)** |
| Y2002 | ? | | -0.0012 | 0.0022 |
| | | | (-5.12)*** | (4.64)*** |
| Y2003 | ? | | 0.0115 | 0.0002 |
| | | | (35.18)*** | (0.30) |
| Adj. $R^2$ | | | 71.79% | 24.59% |
| F-statistic | | | 52.29 | 3.88 |
| | | | (0.000) | (0.000) |
| Sample | | | 263 | 116 |

Note:
Size = the logarithm of total assets.
(See Appendix 6 for other variables definitions)

## APPENDIX 10

### Results of Sensitivity Tests for EPS Model—Yearly Regressions

**Panel A:** $EPS_{t+1} = \beta_0 + \beta_1 EPS_t + \beta_2 BTD_t + \varepsilon_t$ **(Model 2)**

| Year | Sample | $\beta_0$ | $\beta_1$ | $\beta_2$ | Adj. $R^2$ | F-statistic |
|---|---|---|---|---|---|---|
| 2000 | 84 | -0.15<br>(-2.38)** | 1.23<br>(4.77)*** | -15.70<br>(-4.08)*** | 0.233 | 13.64*** |
| 2001 | 97 | 0.001<br>(0.12) | 0.46<br>(3.35)*** | -0.53<br>(-1.69)* | 0.166 | 10.58*** |
| 2002 | 94 | 0.02<br>(2.34)** | 0.75<br>(4.89)*** | -0.94<br>(-7.88)*** | 0.538 | 53.60*** |
| 2003 | 90 | -0.001<br>(-0.10) | 1.04<br>(2.76)*** | -3.13<br>(-2.83)*** | 0.299 | 20.02*** |

**Panel B:** $EPS_{t+1} = \alpha_0 + \alpha_1 EPS_t + \alpha_2 ABTD_t + \alpha_3 NBTD_t + \varepsilon_{t+1}$ **(Model 3)**

| Year | Obs. | $\alpha_0$ | $\alpha_1$ | $\alpha_2$ | $\alpha_3$ | Adj. $R^2$ | Partial F-stat. [a] |
|---|---|---|---|---|---|---|---|
| 2000 | 84 | -0.17<br>(-2.68)*** | 1.36<br>(5.12)*** | -4.14<br>(-0.61) | -21.01<br>(-4.58)*** | 0.262 | 4.16*** |
| 2001 | 97 | -0.001<br>(-0.13) | 0.54<br>(3.83)*** | 0.02<br>(0.04) | -0.59<br>(-1.90)** | 0.189 | 3.69*** |
| 2002 | 94 | 0.02<br>(2.30)** | 0.74<br>(4.64)*** | -1.01<br>(-10.06)*** | -0.85<br>(-4.23)*** | 0.527 | 0.39 |
| 2003 | 90 | -0.002<br>(-0.10) | 1.03<br>(2.77)*** | -2.52<br>(-2.74)*** | -2.74<br>(-2.84)*** | 0.299 | 0.89 |

Note:
(1) * denotes the significance at the level of 10% using a two-tailed test; ** denotes the significance at the level of 5% using a two-tailed test; *** denotes the significance at the level of 1% using of a two-tailed test. Figures in parentheses denote t-statistics based on the heteroscedasticity-consistent covariance matrix (White 1980) if heteroscedasticity is detected or HAC-consistent covariance matrix (Newey and West 1987) if serial correlation is detected.
(2) Variables definitions:
$EPS_{t+1}$: earnings per share in year t+1, deflating by stock price on April 30 following the end of fiscal year t; $EPS_t$: earnings per share in year t, deflating by stock price on April 30 following the end of fiscal year t. BTD: book-tax differences in year t; ABTD: abnormal BTD in year t; NBTD: normal BTD in year t, all deflated by total assets.
[a] The partial F-statistics are used to test whether Model 3 has incremental explanatory power over Model 2.

## APPENDIX 11

### Results of Sensitivity Tests for EPS Model with an Alternative Deflator

$EPS_{t+1} = \beta_0 + \beta_1 EPS_t + \beta_2 BTD_t + \varepsilon_i$

| Year | Sample | $\beta_0$ | $\beta_1$ | $\beta_2$ | Adj. $R^2$ | F-statistic |
|---|---|---|---|---|---|---|
| ALL | 365 | -0.09<br>(-1.30) | 0.79<br>(3.81)*** | -2.99<br>(-4.01)*** | 0.132 | 12.08*** |
| 2000 | 84 | -0.10<br>(-1.45) | 0.87<br>(3.37)*** | -3.38<br>(-1.68)* | 0.107 | 5.98*** |
| 2001 | 97 | 0.01<br>(1.48) | 0.20<br>(0.68) | 0.38<br>(0.15) | 0.142 | 8.97*** |
| 2002 | 94 | 0.01<br>(1.29) | 0.79<br>(4.34)*** | -3.42<br>(-4.30)*** | 0.450 | 39.52*** |
| 2003 | 90 | 0.001<br>(0.01) | 0.99<br>(2.85)*** | -2.85<br>(-2.92)*** | 0.267 | 17.40*** |

(1) * denotes the significance at the level of 10% using a two-tailed test; ** denotes the significance at the level of 5% using a two-tailed test; *** denotes the significance at the level of 1% using of a two-tailed test. Figures in parentheses denote t-statistics based on the heteroscedasticity-consistent covariance matrix (White 1980) if heteroscedasticity is detected or HAC-consistent covariance matrix (Newey and West 1987) if serial correlation is detected.

(2) Variables definitions:

$EPS_{t+1}$: earnings per share in year t+1, deflating by stock price on April 30 following the end of fiscal year t. $EPS_t$: earnings per share in year t, deflating by stock price on April 30 following the end of fiscal year t. BTD: book-tax differences per share in year t, deflating by stock price on April 30 following the end of fiscal year t.

## APPENDIX 12

### Results of Sensitivity Tests for EPS Model with Industry Dummy

**Panel A:** $EPS_{t+1} = \beta_0 + \beta_1 EPS_t + \beta_2 BTD_t + \beta_3 IND_t + \varepsilon_{t+1}$ **(Model 2)**

| Year | Obs. | $\beta_0$ | $\beta_1$ | $\beta_2$ | $\beta_3$ | Adj.$R^2$ | F-statistic |
|---|---|---|---|---|---|---|---|
| ALL | 365 | -0.09<br>(-10.6) | 0.76***<br>(3.09) | -1.18***<br>(-3.85) | 0.02<br>(0.63) | 0.129 | 10.03*** |
| 2000 | 84 | -0.21**<br>(-2.06) | 1.22***<br>(4.69) | -15.54***<br>(-4.02) | 0.09<br>(0.77) | 0.229 | 9.24*** |
| 2001 | 97 | 0.001<br>(0.41) | 0.46***<br>(3.34) | -0.53*<br>(-1.69) | -0.01<br>(-0.42) | 0.159 | 7.05*** |
| 2002 | 94 | -0.01<br>(-0.46) | 0.75***<br>(5.22) | -0.92***<br>(-8.28) | 0.04**<br>(2.48) | 0.558 | 40.14*** |
| 2003 | 90 | 0.02<br>(0.62) | 1.05***<br>(2.80) | -3.10***<br>(-2.76) | -0.03<br>(-1.13) | 0.302 | 13.82*** |

**Panel B:** $EPS_{t+1} = \beta_0 + \beta_1 EPS_t + \beta_2 ABTD_t + \beta_3 NBTD_t + \beta_4 IND_t + \varepsilon_{t+1}$ **(Model 3)**

| Year | Obs | $\alpha_0$ | $\alpha_1$ | $\alpha_2$ | $\alpha_3$ | $\alpha_4$ | Adj. $R^2$ | F-stat. |
|---|---|---|---|---|---|---|---|---|
| ALL | 365 | -0.09<br>(-1.14) | 0.83***<br>(3.19) | -0.83***<br>(-5.53) | -1.37***<br>(-4.41) | 0.02<br>(0.66) | 0.136 | 9.24*** |
| 2000 | 84 | -0.20*<br>(-1.98) | 1.35***<br>(5.10) | -4.49<br>(-0.65) | -20.72***<br>(-4.45) | 0.05<br>(0.44) | 0.254 | 8.09*** |
| 2001 | 97 | 0.001<br>(0.09) | 0.54***<br>(3.80) | 0.01<br>(0.02) | -0.59**<br>(-1.89) | -0.01<br>(-0.20) | 0.181 | 6.30*** |
| 2002 | 94 | -0.01<br>(-0.10) | 0.74***<br>(4.95) | -0.99***<br>(-9.76) | -0.84***<br>(-4.28) | 0.04**<br>(2.45) | 0.555 | 29.96*** |
| 2003 | 90 | 0.02<br>(0.75) | 1.04***<br>(2.81) | -2.32***<br>(-2.31) | -2.59***<br>(-2.56) | -0.04<br>(-1.31) | 0.303 | 10.70*** |

Note:

(1) * denotes the significance at the level of 10% using a two-tailed test; ** denotes the significance at the level of 5% using a two-tailed test; *** denotes the significance at the level of 1% using of a two-tailed test. Figures in parentheses denote t-statistics based on the heteroscedasticity-consistent covariance matrix (White 1980) if heteroscedasticity is detected or HAC-consistent covariance matrix (Newey and West 1987) if serial correlation is detected.

(2) The pooled regression result is based on a year dummy.

(3) Variables definitions:

$EPS_{t+1}$: earnings per share in year t+1, deflating by stock price on April 30 following the end of fiscal year t; $EPS_t$: earnings per share in year t, deflating by stock price on April 30 following the end of fiscal year t. BTD: book-tax differences in year t; ABTD: abnormal BTD in year t; NBTD: normal BTD in year t, all deflating by total assets. IND: dummy variable the equals 1 when a listed firm is in the manufacturing, 0 otherwise.

## APEEDIX 13

### Results of Additional Tests for Return Model with a Different Deflator

$$RET_i = \beta_0 + \beta_1 EPS_i + \beta_2 \Delta EPS_i + \beta_3 BTD_i + \varepsilon_i$$

| Year | Ob. | Intercept | $EPS_j$ | $\Delta EPS_J$ | $BTD_i$ | $Adj.R^2$ | F-statistic |
|---|---|---|---|---|---|---|---|
| ALL | 468 | 0.02<br>(0.55) | 3.08***<br>(8.44) | 0.34<br>(0.94) | -10.54***<br>(-2.26) | 0.096 | 17.46*** |
| 2000 | 84 | 3.63***<br>(18.89) | -0.83<br>(-1.28) | 2.42*<br>(1.76) | 0.51<br>(0.08) | 0.022 | 1.62 |
| 2001 | 99 | -0.29***<br>(-12.49) | -0.34<br>(-1.19) | 0.96***<br>(3.01) | -3.17**<br>(-2.28) | 0.096 | 1.46** |
| 2002 | 99 | -0.22***<br>(-14.52) | 1.58***<br>(3.76) | 0.06<br>(0.55) | -3.60**<br>(-2.37) | 0.480 | 31.16*** |
| 2003 | 95 | -0.10***<br>(-3.02) | 2.42***<br>(7.05) | 0.14<br>(1.07) | -7.78***<br>(-5.46) | 0.431 | 24.72*** |
| 2004 | 91 | -0.40***<br>(-9.69) | 2.57**<br>(2.38) | -0.02<br>(-0.10) | -6.20*<br>(-1.76) | 0.354 | 17.47*** |
| Mean [a] | | | (2.14)** | (1.26) | (-2.36)** | | |

(1) *, ** and *** denotes the significance at the 0.1, 0.05 and 0.01 level using a two-tailed test. Figures in parentheses denote t-statistics. In yearly regressions, t-statistics are based on the heteroscedasticity-consistent covariance matrix (White 1980) if heteroscedasticity is detected or HAC-consistent covariance matrix (Newey and West 1987) if auto-correlation is detected. In pooled regression, GLS and heteroscedasticity-consistent covariance matrix are applied.

(2) Variables definitions:

$RET_t$: the return over the 12-months ending on April 30 following the end of fiscal year t; $EPS_t$: earnings per share in year t, deflated by stock price on April 30 following the end of fiscal year t-1; $\Delta EPS_t$: annual difference changes in earnings per share for period t deflated by stock price on April 30 following the end of fiscal year t-1; $BTD_t$: book-tax differences per share in year t, deflated by stock price on April 30 following the end of fiscal year t-1;

[a] This is the mean of the yearly coefficients, estimated to test for the effect of cross-sectional correlation in the error terms.

## APPENDIX 14

### Results of Additional Tests for Return Model with Industry Dummy

$$RET_i = \beta_0 + \beta_1 EPS_i + \beta_2 \Delta EPS_i + \beta_3 BTD_i + \beta_4 IND_i + \varepsilon_i$$

| | N | Intercept | $EPS_i$ | $\Delta EPS_i$ | $\Delta BTD_i$ | $IND_i$ | $Adj.R^2$ | F-stat. |
|---|---|---|---|---|---|---|---|---|
| ALL | 468 | 0.02 | 2.79*** | -0.17 | -3.19*** | 0.06 | 0.080 | 11.22*** |
| | | (0.21) | (7.86) | (-0.49) | (-2.61) | (1.11) | | |
| 2000 | 84 | 3.19*** | -1.56* | 3.09** | 19.44 | 0.74* | 0.076 | 2.71* |
| | | (9.75) | (-1.76) | (2.36) | (1.38) | (1.95) | | |
| 2001 | 99 | -0.26*** | -0.23 | 1.09*** | -1.60** | -0.05 | 0.160 | 5.66** |
| | | (-8.89) | (-1.27) | (4.03) | (-2.56) | (-1.62) | | |
| 2002 | 99 | -0.23*** | 1.40*** | 0.03 | -0.76** | 0.03 | 0.448 | 20.92*** |
| | | (-10.93) | (4.03) | (0.29) | (-2.59) | (1.33) | | |
| 2003 | 95 | -0.10** | 2.54*** | -0.22* | -5.19*** | 0.02 | 0.431 | 18.80*** |
| | | (-2.07) | (7.38) | (-1.91) | (-6.07) | (0.28) | | |
| 2004 | 91 | -0.37*** | 2.38** | -0.10 | -7.70 | -0.04 | 0.317 | 11.45*** |
| | | (-4.98) | (2.43) | (-0.48) | (-1.58) | (-0.48) | | |
| Mean | | | (2.16)* | (0.86) | (-2.28)* | | | |

Note:

(1) * denotes the significance at the level of 10% using a two-tailed test; ** denotes the significance at the level of 5% using a two-tailed test; *** denotes the significance at the level of 1% using of a two-tailed test. Figures in parentheses denote t-statistics. In yearly regressions, t-statistics are based on the heteroscedasticity-consistent covariance matrix (White 1980) if heteroscedasticity is detected or HAC-consistent covariance matrix (Newey and West 1987) if auto-correlation is detected. In pooled regression, GLS and heteroscedasticity-consistent covariance matrix are applied.

(2) Variables definitions:

RET: the return over the 12-months ending on April 30 following the end of fiscal year t. EPS: earnings per share for period t deflated by stock price on April 30 following the end of fiscal year t. ΔEPS: annual difference changes in earnings per share for period t deflated by stock price on April 30 following the end of fiscal year t. BTD: book-tax differences for period t deflated by total assets. IND: dummy variable that equals to 1 when a listed firm is in manufacturing, 0 otherwise.