CORPORATE INCOME TAX AGGRESSIVENESS IN CHINA: REGULATORY ENVIRONMENT AND OWNERSHIP IMPACT

Guodong Yuan
School of Commerce, University of South Australia
City West Campus, Adelaide SA 5001, Australia
e-mail: australia.research.gordon@gmail.com

Ron P McIver
School of Commerce, University of South Australia
City West Campus, Adelaide SA 5001, Australia
e-mail: Ronald.McIver@unisa.edu.au

Michael Burrow
School of Commerce, University of South Australia
City West Campus, Adelaide SA 5001, Australia
e-mail: Michael.Burrow@unisa.edu.au

Abstract

Purpose – Corporate income tax aggressiveness, via aggressive tax planning behaviour, involves utilising the tax regime to reduce income tax paid. In 2008 China implemented its new Enterprise Income Tax Law with several major effects. First, the tax rate was reduced from 33 to 25 per cent. Second, this rate was applied to all enterprises, including foreign enterprises and enterprises with foreign investments. Finally, the reforms included enforcement of tax scrutiny to match the application of the 2007 Accounting Standards for Business Enterprises No.18 - Corporate Income Tax Accounting. This study addresses two questions regarding potential corporate responses to the statutory changes in tax rates and greater scrutiny by the tax office in China. Have the changes to the tax regulatory environment had an impact on the corporate tax aggressiveness of listed companies in China? Does the structure of ownership of these companies – i.e., state-controlled, private or foreign-invested – impact on the response to the changes?

Design/methodology/approach – China's 2007 implementation of its Accounting Standards for Business Enterprises No.18 - Corporate Income Tax Accounting and its 2008 implementation of its Enterprise Income Tax Law offer a 'natural experiment' opportunity involving both accounting standard and tax regime reforms in a transition economy. This study uses quantitative methods to examine the book-tax gap in light of the above research questions. It is based on effective tax planning, agency, tax avoidance and legitimacy theories. Data is comprised of a sample of 1900 companies listed on the Shanghai and Shenzhen Stock Exchanges with state-controlled, private or foreign-invested ownership characteristics. This provides 6287 firm-years of observations for the 2007 to 2010 period.

Findings – The results suggest that tax aggressiveness of listed companies as measured by the book-tax gap measure has reduced as a result of the 2008 Enterprise Income Tax reform. However, we find limited evidence to support claims that different ownership structures (state-controlled, private or foreign-invested ownership) have a significant relationship with tax aggressiveness in China.

Originality/value – Originality results from use of the 'natural experiment platform' and examination of changes in tax aggressiveness in China resulting from the introduction of its new accounting and tax regimes. The paper's contributions are: to demonstrate the effectiveness of China's 2008 tax reforms in limiting tax aggressiveness; and to add to the literature on the impact of ownership structure on tax aggressiveness. In the specific case of China this has received little attention to date. This information will be of use to tax regulators, investors and corporations.

Keywords: China, corporate income tax aggressiveness, regulatory environment change, ownership impact, transition economy.

1. INTRODUCTION

The ability of China's central government to raise revenues via taxation has traditionally been seen as poor, reflecting the devolvement of responsibility for collection to lower levels of government, widespread tax avoidance/evasion, and the provision of widespread tax relief (Deng & Smyth 2000). Not surprisingly, corporate taxes provide a significant share of China's tax revenues, representing 17.5 per cent of total

government tax revenues and 19.2 per cent of central government tax collections as of 2010 (National Bureau of Statistics of China 2011). This compares to a pre-GFC peak in the average share of corporate tax in total tax of just 10.6 per cent for OECD countries in 2007, a share which had declined to just 8.4 per cent as of 2009 (OECD 2011).

Taxes are (increasingly) seen as a significant motivating factor in corporate decisions (Lanis & Richardson 2010), a point that is particularly important given China's transition from a planned to a market-oriented economy. Thus, corporate income tax aggressiveness—aggressive tax planning behaviour that utilises the tax regime to reduce income tax paid—is a factor that China's central government must consider given its relatively heavy reliance on corporate tax revenues. In 2008 China implemented its new Enterprise Income Tax Law with several major effects. First, the tax rate was reduced from 33 to 25 per cent. Second, this rate was applied to all enterprises, including foreign enterprises and enterprises with foreign investments. Finally, the reforms included enforcement of tax scrutiny to match the application of the 2007 Accounting Standards for Business Enterprises No.18—Corporate Income Tax Accounting.

China's 2007 implementation of its Accounting Standards for Business Enterprises No.18—Corporate Income Tax Accounting and its 2008 implementation of its Enterprise Income Tax Law offer a 'natural experiment' opportunity involving both accounting standard and tax regime reforms in a transition economy. We use this opportunity to address two questions regarding corporate responses to China's statutory changes in tax rates and greater scrutiny of tax compliance by its tax office. Have the changes to the tax regulatory environment affected the level of corporate tax aggressiveness of listed companies in China? Does the structure of ownership of these companies—i.e., state-controlled, private or foreign-invested—impact on the corporate response to China's changes to its taxation regime?

To address the two research questions this study, which draws on effective tax planning, agency, tax avoidance and legitimacy theories, examines changes in China's listed companies' book-tax gap—the difference between the financial pre-tax income from financial reports and the taxable income reported to the tax authorities—associated with reform of its corporate taxation regime. Our use of the book-tax gap is consistent with other current research in this area that links tax aggressiveness to the book-tax gap (e.g., Desai & Dharmapala (2003; 2006; 2007; 2009), Jimenez-Angueira (2008), Hanlon & Slemrod (2009), Mills (1998), Moore (2007), Wilson (2007), Richardson & Lanis (2007), Rohaya, Nor'Azam & Barjoyai (2008), and Rego & Wilson (2010)). Data is comprised of a sample of 1,900 companies listed on the Shanghai and Shenzhen Stock Exchanges with state-controlled, private or foreign-invested ownership characteristics. This provides 6,287 firm-years of observations for the 2007 to 2010 period.

This paper derives its originality from use of a 'natural experiment platform' through its examination of the impact of China's new accounting and tax regimes on corporate tax aggressiveness in China. The paper therefore contributes to the existing literature in several ways. Primarily, it addresses the matter of the effectiveness of China's 2008 tax reforms in limiting tax aggressiveness. Additionally, it adds the literature on the impact of ownership structure on tax aggressiveness.

Most of the previous research in this area has been conducted in the U.S., and so the way tax aggressiveness operates in other countries has rarely been documented. Similarly, few studies have been conducted on whether tax aggressiveness displays different characteristics in transition economies to those shown in developed market-oriented economies. In the specific case of China this has received little attention to date. Finally, there is limited evidence of the extent to which variations in tax aggressiveness are caused by changes in the tax regulatory environment. Thus, the results in this paper will be of use to tax regulators, investors and corporations.

The rest of this paper is organised as follows. Section 2 provides the literature reviews and develops our hypotheses. Section 3 describes the research design. Section 4 reports the empirical results, and Section 5 presents conclusions.

2. LITERATURE AND HYPOTHESES

Business tax planning includes both tax saving and tax avoidance (Jin & Lei 2011), and thus spans a spectrum of activities that reduce the rate of corporate tax paid on earnings. To ensure clarity in our discussion, the related literature (e.g., that cited in Hanlon & Heitzman 2010) defines corporate income tax aggressiveness (often referred to as tax avoidance) as being at the more aggressive end of the spectrum of this set of tax planning behaviours. This business strategy has recently received increasing attention by researchers (Zheng & Han 2008; Desai & Dharmapala 2009). Perspectives on tax aggressiveness vary by

stakeholder group. Tax aggressiveness may be favoured by investors where it transfers value from the government to the firm, advancing shareholder's interests (Desai & Dharmapala 2009). However, tax aggressiveness and managerial efforts to divert value from shareholders may be intertwined, given inherent agency problems in publicly listed companies (Desai & Dharmapala 2009). Additionally, the tax authorities may attempt to enforce the tax regulatory environment by introducing initiatives and developing regulations to encourage corporate tax compliance, which will result in clearer interpretations of tax law, fewer tax audit interventions, lower opportunity and marginal costs, and improved certainty about tax risk (OECD 2009). Thus, corporate shareholders must find an effective way to communicate their tax planning preferences to corporate managers, especially under the circumstances of regulatory environment changes (Jimenez-Angueira 2008).

Existing literature laying the theoretical foundation for understanding tax aggressiveness within an agency framework argues that aggressive tax activities may result from an incentive for managers to exploit the tax function to extract private rents and increase their personal utility at the expense of shareholders' interests. Therefore, it is necessary to strengthen supervisory systems to limit these rents and so to decrease agency costs. Supervision systems normally embody inside and outside aspects. Inside supervision constrains agency problems through more effective corporate governance. Outside supervision relies mainly on stakeholders such as external auditors, government regulatory bodies and the media to improve corporate governance so as to reduce agency costs (Jin & Lei 2011). In transition and emerging market economies business behaviour is often influenced by factors related to internal governance and outside regulatory environment. Tax planning, as a designated business activity to maximise after-tax benefits, is affected by transition factors including ownership patterns and regulatory scrutiny from the government.

Although there is little intersection between tax aggressiveness, regulatory environment, and corporate governance studies, the results in the extant literature provide a theoretical link between the areas and an appropriate foundation to our empirical study of the interaction of regulatory environment, corporate governance and tax aggressiveness.

2.1 Related theories

Theories related to tax aggressiveness can mainly be located in the so-called theory of effective tax planning and in the theory of tax avoidance.

2.1.1 Theory of effective tax planning

As an important tax-related behaviour and financial activity, tax planning has received significant attention as a factor in corporate strategic management. It is associated with the processes of setting up and operating the enterprise, investing, and so on. Early tax planning theories focused on minimizing taxpayers corporate tax obligations—their explicit tax—through operational activities (Zheng & Han 2008). Although simple in idea and implementation, this traditional approach does not consider the costs, legality and variety of real constraints faced in meeting this objective, potentially resulting in risk and loss. To overcome such shortcomings, Scholes and Wolfson (1990) introduced the so-called 'theory of effective tax planning'. In the presence of perfect markets, the objectives of the traditional and effective tax planning frameworks are almost identical. However, given the existence of uncertainty and information asymmetry in the real world, their objectives began to differ. The core objective of effective tax planning theory is the maximisation of after-tax benefits. This requires consideration of the various types of costs and constraints related to achieving this goal. In doing so it emphasises that the proper goal of tax planning is not just tax minimisation, but is instead the optimisation of total tax burdens—including those that are able to be passed on to/saved from other parties. Thus, effective tax planning must consider the transactions of all parties, explicit taxes and implicit taxes, tax costs and non-tax costs. This theory therefore encourages corporations to trade off tax savings against non-tax costs in their choices of investment, financing, and compensation. This theory, which is based on the basic concepts and methods of modern contract theory, provides an analytical framework for corporations on how to achieve strategic objectives through tax strategy, and provides a classic paradigm within which to research and interpret corporate tax planning activities.

As proposed by Scholes & Wolfson (1992), effective tax planning has three key ideas that determine the optimal scale for tax planning under conditions of uncertainty and information asymmetry in incomplete markets. Firstly, effective tax planning requires that planners consider the tax implications for all parties associated with the transaction. From a contract perspective, these parties include employers, employees,

customers and the tax authorities. All contracting parties and their reactions should be taken into account during the tax planning process. Effective tax planning trades off benefits to all transactional parties to achieve long-term goals. Secondly, effective tax planning requires planners to not only consider explicit taxes—the tax burden for the enterprise as regulated by tax law and paid directly to the tax authorities—but also implicit taxes when making investment and financing transactions. Implicit taxes are an actual burden, but are not required to be paid to tax authorities under tax law. Instead implicit taxes take the form of reduced rates of return associated with the firm's inability to capture explicit tax savings (Callihan & White 1999). Thirdly, effective tax planning requires that planners consider all costs including non-tax costs. Tax savings are not necessarily the best or the most feasible solution, because tax is just one of many operating costs. Tax planning may lead to an increase in other transactional costs, called non-tax costs, thus tax planners should first trade-off tax savings and non-tax costs. For example, financial reporting costs are typical non-tax costs faced by listed companies, caused by the decrease of profits in the financial statements during tax planning. Earnings per share will decrease with the decline of profits in the financial statements, which may cause a fall in share prices and thus in the firm's value, increasing costs associated with capital market financing and increasing merger and acquisition risk. A decline in profits reported in the financial statements will also affect managers' interests, potentially causing inconsistencies to arise between the interests of managers and shareholders and thus increasing agency costs. Under conditions of information asymmetry, various stakeholders may make decisions based on the company's external financial reports. Management may give up substantial tax savings because of the impact on accounting profits, because they believe that while tax planning may increase cash flow, stock prices are affected by the disclosure of the accounting profit rather than cash flows. Therefore, the cost of financial reporting is an important factor to consider in tax planning. Non-tax costs caused by asymmetric uncertainty are also an important constraint to be considered in effective tax planning.

2.1.2 Theory of corporate tax avoidance

There are two major alternative perspectives derived from theories of corporate tax avoidance that underpin related empirical research. First, is a commonly-held view that corporate tax shelters are simply devices for achieving tax-savings but do not present other aspects of agency problems (Desai & Dharmapala 2009). Thus, managers conduct tax aggressive activities for the sole purpose of decreasing tax burdens, and investors believe that tax avoidance is a value-enhancing activity. For this reason managers should be both motivated to achieve and compensated for tax avoidance activities (Kim, Li & Zhang 2011). This view mainly considers the direct costs of tax avoidance such as managers' time and possible risk of detection. The representative paper of this view is that of Graham and Tucker (2006), who construct 44 corporate tax shelter cases, identifying that characteristics such as size and profitability are positively associated with the use of tax shelters and arguing that tax shelters may substitute for interest deductions in determining capital structure (Desai & Dharmapala 2009). Phillips and John (2003) argue that compensation for managers could motivate tax aggressive behaviours.

An alternative perspective is that due to the separation between ownership and control, corporate tax avoidance may reflect agency problems. Shareholders and board of directors try to find control mechanisms and incentives to reduce agency costs (Jensen & Meckling 1976). Therefore, with agency theory incorporated into explanations of tax avoidance behaviour, another view emerges. Under this alternative theoretical approach the focus is on the interaction of tax avoidance and the agency tension between managers and investors inherent in publicly listed companies. This view of tax avoidance is underpinned by theoretical foundations set by Slemrod (2004), Chen, KP & Chu (2005), Crocker & Slemrod (2005) and Desai, Dyck & Zingales (2007). For example, Chen, KP & Chu (2005) use a 'standard principal-agent model' to examine tax avoidance, finding that incentives to avoid tax are reduced by the costs associated with losses in internal controls that arise when management is compensated for engaging in risky tax behaviour. Crocker & Slemrod (2005) examine the compensation of tax directors and the effectiveness of tax penalties from the point of agency issues. They find that penalties applied to tax managers, rather than to shareholders, are more effective in reducing tax evasion. Desai and Dharmapala (2006), Desai et al. (2007), and other studies focus on the links between firms' governance arrangements and their responses to taxes. To summarise, corporate tax avoidance not only entails distinct costs, but these costs may outweigh potential benefits to shareholders of tax aggressiveness (avoidance).

2.1.3 PMLTA: the trade-offs of costs and benefits of tax aggressive behaviours

Based on the agency, effective tax planning and tax avoidance theories, Jimenez-Angueira (2008) develops a theoretical framework called 'profit-maximising level of tax-aggressiveness' (PMLTA) to determine the optimal level of tax aggressiveness for the firm. The traditional view of corporate tax avoidance argues that an increase in tax aggressiveness represents a wealth transfer, this being from the government to firms' shareholders. Thus any increase in the firms' value comes at the taxpayers' expense (Jimenez-Angueira 2008). Because of agency problems, shareholders must find an effective way to communicate their tax planning preferences to management. Therefore, Jimenez-Angueira (2008) proposes that through the corporate governance system shareholders must put in place incentives and controls that induce managers to take tax positions that result in a profit-maximizing level of tax-aggressiveness (PMLTA) given the specific tax regime. At such a level the marginal benefits of tax aggressive transactions are balanced against the marginal costs of those activities. In this case, the costs of tax-aggressiveness not only include transaction, non-compliance, and political costs, but also the related compensation and monitoring costs associated with the agency relationship. In particular, tax regime changes that reduce the potential for mangers to extract rents through tax-related activities will reduce the level of tax aggressiveness undertaken by firms.

2.2 Related empirical studies

This paper follows in the path of previous research such as Desai and Dhammika's (2009) study of the impact of tax avoidance on firm value, and Jimenez-Angueira'(2008) study of the effects of the interaction between tax environment changes and corporate governance on tax aggressiveness and market valuation. Previous research has also identified a set of characteristics that may provide a source of variation in measures of tax avoidance across firms. For example, Stickney and McGee (1982), Zimmerman (1983), Porcano (1986), Shevlin and Porter (1992), and Rego (2003) provide evidence on the association between tax avoidance and firm size. Gupta and Newberry (1997) identify that tax aggressiveness is associated with lower profitability, but higher leverage and capital intensity. Recent research shows that firms accused of using tax shelters are more profitable, and have larger book-tax differences, are more focused on foreign operations, subsidiaries in tax havens, more research and development expenditures, and less leverage (e.g., Graham and Tucker 2006; Wilson 2009; Lisowsky 2010).

With respect to the impact of ownership characteristics, several empirical studies explore how ownership structure affects corporate tax avoidance (Rego, S & Wilson, R 2010). Chen et al. (2010) provide evidence that family-owned firms avoid income tax by less than non-family-owned firms because the dominant owner managers of family-owned firms want to forgo tax benefits to avoid concerns by minority shareholders that tax avoidance masks rent extraction by the family owner-managers. Badertscher et al. (2010) suggest that public firms engage in more book-tax nonconforming tax avoidance than private firms, while private firms engage in more book-tax conforming tax avoidance. Rego (2003) demonstrates that multinational corporations with more extensive foreign operations are more tax aggressive.

In relation to the above research, limited empirical research on tax aggressiveness has been conducted in China. Wang (2002) analyses the determinants of the effective tax rate of listed companies in China. Wang and Wu (2007) study the impact of the statutory tax rate on the effective tax rate of listed companies after changes in regional tax policies in 2002. Zheng and Han (2008) use a sample of private and state-controlled listed companies in China over the period 2002-2005 to empirically test the impact of ownership structure on tax planning strategies. Their empirical results suggest that levels of tax avoidance differ significantly, and that state-controlled listed companies tend to put in place conservative tax avoidance behaviours as compared to those of private listed companies. However, this research predates China's recent changes to both accounting standards and its corporate tax regime.

2.3 Hypothesis development

Since 2006, China has undertaken many major reforms of legislation and regulation, of which the two of interest in this paper are its revision of accounting standards through its 2007 implementation of its Accounting Standards for Business Enterprises No.18—Corporate Income Tax Accounting and tax legislation through its 2008 implementation of the Enterprise Income Tax Law. The revised Accounting Standards for Business Enterprises No.18—Corporate Income Tax Accounting imply significant changes to

the technical standards required in accounting recognition and measurement for revenue, expenses and losses, and thus to the recorded differences between financial income before tax (in accordance with GAAP) and taxable income. Under the changes introduced in the 2008 Enterprise Income Tax Law, the tax regulatory environment has become more stringent. Additionally, due to a lowering of the income tax rate to 25 per cent, incentives for tax avoidance may also have been reduced. Therefore, the following hypothesis is made:

Hypothesis 1: As a result of the 'Enterprise Income Tax' reform of 2008, the tax aggressiveness of China's listed companies as measured by the book-tax gap measure has reduced.

This hypothesis is designed to examine whether corporations decreased their tax aggressiveness following the statutory change in tax burden and the greater scrutiny of the tax office in 2008, by considering changes in the average book-tax gap between the pre-regulatory change period and post-regulatory change periods.

Regulatory environment and agency theories underpin this hypothesis. Consistent with Desai et al.'s (2007) theoretical predictions, the level of tax aggressiveness would be affected: (1) directly, by the increased costs imposed by the greater scrutiny applied under the new tax regime; and (2) indirectly, by the resolution of tax-related agency issues that would act to bring tax aggressiveness closer to its optimal level. These effects are expected to be larger for firms with greater pre-existing conflicts of interest related to the tax function that, by assumption, were firms with weak-governance structures (Jimenez-Angueira 2008).

Two aspects of ownership structure are considered in this study. The first is who hold the company's shares, which references the quality of the ownership structure. The second is the proportion of shares held by each kind of shareholder, which captures control of the ownership structure (Zheng & Han 2008). With the reform of shareholder structure and corporatization of what were previously state sole proprietorships China's state-controlled and non-state-controlled listed companies can both be publicly listed on stock exchanges. Forms of enterprise have become more diversified, following styles established for western corporations, including family-owned firms and non-family-owned firms, and foreign-invested companies. Thus, the following two non-directional (Chen et al. 2010) hypotheses are made to test the impacts of different ownership characteristics on tax aggressive behaviours. This reflects that differences in ownership structure may imply different non-tax costs, and lead to different trade-offs in the benefits and costs of tax aggressive activities. This also addresses the potential differences in impact of the regulatory reforms on domestic and foreign-invested listed companies and their tax aggressiveness. In particular, the 2008 reforms unified at 25 per cent two systems of corporate taxation: the previous tax rate of 33 per cent for domestic companies; and the two years' of tax exemption and three years' of a preferential tax rate for foreign-invested companies.

Hypothesis 2a: State-controlled listed companies exhibit a systematically different level of tax aggressiveness compared to non-state-controlled listed companies.

Hypothesis 2b: Foreign-invested companies exhibit a systematically different level of tax aggressiveness compared to domestic companies.

These hypotheses relate to how different forms of ownership and control may affect tax aggressiveness. Legitimacy and political cost theories may support this hypothesis. In China, state-controlled listed companies tend to receive more attention from their stakeholders, and so have larger political costs than non-state-controlled listed companies. Consistent with Chen, Lobo and Wang (2010) and Zheng and Han (2008), China's state-controlled and non-state-controlled companies differ in their tax incentives. In particular, state-controlled companies may be less tax sensitive because their taxes are paid back to the ultimate shareholder—the government. A tax on state-controlled companies' profits simply reduces the amount of profits otherwise distributable to the government, and therefore appears simply to move money from one arm of government's pocket to another. Sometimes, the CEO of a state-controlled company may be given 'credit' for taxes paid, if the government chooses to use that as a measure of how much the state-controlled company contributes to society. Non-state-controlled companies, however, are likely to be more tax aggressive because their focus is more on maximising (private) shareholders' value. Thus, as per Zheng and Han (2008), state-controlled listed companies may be expected to undertake more conservative tax avoidance strategies than private-controlled listed companies.

The new 2008 enterprise income tax reform in China may have impacts on foreign-invested listed companies considering their previous preferential tax policy will be progressively removed. The benefits of tax aggressiveness are expected to be higher for foreign-invested companies' owners than for owners in domestic firms (although political costs may be higher too). However, given differences in corporate culture, business philosophy and other issues, it is not clear whether foreign-invested firms will be more or less tax aggressive than domestic firms.

3. SAMPLE AND RESEARCH DESIGN

3.1 Sample selection

The choice of 2007 to 2010 as the sample period reflects requirements for China's listed companies to adopt the Accounting Standards for Business Enterprises No.18—Corporate Income Tax Accounting in 2007, and then from 2008 to operate under the new Enterprise Income Tax Law. This study selects and defines 2007 as the pre-change tax regulatory environment period, and 2008 to 2010 as the post-change tax regulatory environment period. This makes it possible to conduct comparable analysis, choose proxies and refer to previous international research findings.

Table 1

Composition and characteristics of Sample Companies

	Number	Per cent
Sample selected from Shanghai and Shenzhen Stock Exchanges	2,128	100.00
By type of stock		
A	1,956	91.91
B	22	1.03
AB	84	3.95
AH	66	3.10
By ownership characteristics		
State-controlled	758	35.59
Non state-controlled	1,370	64.41
Less:		
Financial corporations	38	
Companies marked with ST, SST, S*ST	167	
Companies whose ultimate controllers cannot be decided	23	
Total companies left in sample	1,900	

For this study the minimum number for the sample was determined by Green's (1991) rule-of-thumb. 2,128 listed companies were sampled from the current Shanghai Stock Exchange (SHSE) and Shenzhen Stock Exchange (SZSE) for the 2007 to 2010 period. The panel data set involves matched company observations for years within the sample period and is unbalanced because some companies were listed after 2008. The ultimate controllers refer to the ultimate shareholders who have the largest proportion of equity (Jin & Lei 2011). Companies include foreign-invested listed companies and domestic listed companies, with the latter being divided between state-controlled and non-state-controlled companies. Of the listed companies sampled there are 758 state-controlled companies and 1,370 non-state-controlled companies. From the 2,128 in the original sample, financial service companies are excluded because of differences in their financial reporting data. Companies whose ultimate controllers cannot be decided or are unknown are also excluded from the sample. Firm-years with missing or insufficient data and abnormal values are also deleted. Because Special Treatment (ST) and Particular Transfer (PT) listed companies usually have poor profitability or even have no profits, the income tax expense behaviour of these companies will not be consistent with that of profitable companies' tax and so these companies have been deleted from the sample. Companies whose name has changed are also excluded. The final sample size is 1,900 companies.

3.2 Data collection

Annual financial reporting data and company financial reports for the years 2007 to 2010 provide the major data sources for the sample. Data has been collected to develop and calculate the proxies from the following three main sources:

Financial databases in Australia and China:

- OSIRIS, developed by BvD (Bureau van Dijk), a comprehensive database of listed companies, banks and insurance companies around the world
- CSMAR, developed by Shenzhen Guotaian Information Technology Company Limited (GTA) in China
- OneSource.

An audit of the data was undertaken. Where inconsistencies between the data presented in OSIRIS and original Chinese source material (e.g., annual reports) was determined a manual collection of additional data was undertaken and the data set corrected. Inconsistencies mainly reflected the use of Hong Kong accounting standard versions of annual reports for companies listed both in Hong Kong and on one of the mainland exchanges. In this situation data from the mainland version of the annual report was used to ensure consistency with the remaining company data.

Additional information was derived from the following financial and economic websites:

- China Stock Markets Web: http://www.hkex.com.hk/eng/index.htm
- Shanghai Stock Exchange (SHSE) website: http://www.sse.com.cn
- Shenzhen Stock Exchange (SZSE) website: http://www.szse.cn
- Chinese Listed Companies Information website: http://www.cnlist.com
- Juchao Information website: http://cninfo.com.cn
- China Infobank, a web-based online service providing Chinese news, business and legal information (Shan 2009).

3.3 Dependent variables: measurement of tax aggressiveness

As noted above, several measures of tax aggressiveness have been utilised in previous research. Considering the Chinese environment, and based on previous research studies on China, this study uses three alternative measures.

Permanent Book-tax difference (gap): Prior research (Shevlin 2001; Weisbach 2001; Rego, S & Wilson 2009) has shown that temporary book-tax differences reflect earnings management via pre-tax accruals (e.g., Phillips, J, Pincus & Rego 2003; Hanlon 2005) and permanent book-tax differences are more reliable in measuring tax reporting aggressiveness than total or overall book-tax differences (Khurana & Moser 2009). Therefore, consistent with Frank, M, Lynch and Rego (2008), Rego and Wilson (2009), and Khurana Moser (2009), this study measures and calculates the permanent book-tax difference (*P_BTD*) as follows:

$$P\_BTD_{it} = \frac{\left(BI_{it} - \frac{CTE_{it}}{STR} - \frac{DTE_{it}}{STR} \right)}{Assets_{it-1}}.$$

The permanent book-tax difference is calculated as the firm's pre-tax book income (*BI*) less an estimate of taxable income gro0ssed-up by the statutory corporate tax rate and deferred tax expense grossed-up by the statutory corporate tax rate. Taxable income is estimated by current federal tax expense (*CFTE*) divided by the corporate statutory income tax rate (*STR*). Deferred income tax expenses (*DTE*) grossed-up by the corporate statutory tax rate (*STR*) are subtracted. The measure of permanent book-tax differences is scaled by beginning period total assets (*Assets*).

D-D Book-tax difference (gap): The Desai-Dharmapala measure is the residual from a regression of the Manzon-Plesko book-tax difference on total accruals. As the book-tax difference can be a result of both earnings management and tax planning, the Desai-Dharmapala measure removes, at least partially, the book-tax difference caused by earnings management activities (Chen, S et al. 2010). To quantify the degree to which earnings management is responsible for the gap, this study adopts Desai and Dharmapala (2006)'s

approach to isolate the component of total book-tax difference (BT_{it}) that is attributable to earnings management by using data on accruals. The ordinary least squares (OLS) regression is run:

$$BT_{it} = \beta_1 TA_{it} + \mu_{it} + \varepsilon_{it}.$$

Where, BT_{it} is book−tax gap for firm i in year t, scaled by the lagged value of assets; TA_{it} is total accruals for firm *i* in year *t*, scaled by the lagged value of assets. The residual from this regression (the component of BT_{it} that cannot be explained by variations in total accruals, and hence by earnings management) can be interpreted as a measure of tax aggressive activity. This study denotes this residual book-tax gap by DD_BTD_{it}, where:

$$DD\_BTD_{it} = \mu_{it} + \varepsilon_{it}.$$

GAAP ETR: The firm's effective tax rate is as defined under Generally Accepted Accounting Principles (GAAP) (hereafter, *GAAP_ETR*), which is total tax expense (current plus deferred tax expense) divided by pre-tax accounting income (adjusted for special items):

$$GAAP\_ETR_{it} = \frac{\left(\text{Current income tax expense}_{it} + \text{Deferred income tax expense}_{it}\right)}{\text{Pre-tax accounting income}_{\text{it-1}}}.$$

Originally proposed by Surrey (1973), the *GAAP_ETR* is a widely-used measure of tax planning effectiveness. This measure reflects aggressive tax planning through permanent book-tax differences. Examples of such tax planning are investments in tax havens with lower foreign tax rates (provided that foreign source earnings are classified as permanently reinvested), investments in tax-exempt or tax-favoured assets, and participation in tax shelters that give rise to losses for tax purposes but not for book purposes (see Wilson, 2009 for a discussion of such shelters).

3.4 Independent variables: identifying tax regulatory environment changes and measuring different ownership structure characteristics

Post∆reg. To address the difficulty in identifying the tax regulatory environment changes, the sample was restricted to the periods from 2007 to 2010 and was divided into two parts: the pre-tax-environment-change period (year 2007), and the post-tax-environment-change period (years 2008–2010). The new income tax law and new accounting standard in the post-tax-environment-change period led to the increase in tax enforcement. It is assumed that the pre-tax-environment-changes (or low-tax regulation) period included the years when corporate tax aggressiveness was presumably high, and the post-tax-environment-changes (or high-tax regulation) period when the tax office focused its efforts towards enforcement of the new tax law. So, firms' incentives or intentions to tax aggressive behaviours under the new tax regime will be reduced. By identifying the two periods to implement the pre- and post-tax-environment-changes design, it is helpful to test the main effect of the tax environment changes. In the empirical model, this study uses '*PostDreg*' in the form of a dummy variable—equal to 1 for the post-tax-environment-change period (years 2008–2010) and 0 otherwise.

***State*.** It is arguably difficult to form a generally accepted definition of a state-controlled listed company in China. According to the *Corporation Law* in China, state-controlled listed companies are defined as those companies directly or indirectly owned or controlled by state asset management bureaus or other state-owned companies controlled by the central government or local governments holding more than a 50 per cent of shares, or those holding less than 50 per cent of the shares, but having real controlling rights or a significant impact on the board of directors. Listed non-state-owned companies are defined as those companies controlled by private investors, excluding township-village enterprises whose ultimate controlling shareholder cannot be identified (Zheng & Han 2008). According to La Porta et al. (1999), an ultimate controlling shareholder can be identified via the pyramid structure. However, identifying ultimate controlling shareholders through pyramid shareholding schemes is not easy, especially in the Chinese context (Liu &

Sun 2003). Following previous studies, the empirical model of this study uses the variable of 'State' which represents the proportion of shares held by the state to indicate the ownership type.

***Foreign*.** As with the definition of a state-controlled corporation the classification for foreign-invested listed companies is also complicated. Since China's reform and opening up policies which attracted foreign investments in the early 1980s, foreign-invested companies have gradually developed. According to the current classification by the SAIC (State Administration of Industry and Commerce), foreign direct investment in china is divided into four categories, namely Sino-foreign equity joint venture (set up by Chinese enterprises and foreign enterprises through joint investments), Sino-foreign co-operative joint venture (set up by Chinese enterprises and foreign enterprises in accordance with the contractual relationship and the profits are distributed according to agreements rather than proportion of shares), wholly foreign-owned enterprises (completely invested in by foreign enterprises), and foreign-funded companies limited by shares (a company with joint investment shares or wholly-owned foreign investment shares).

Generally speaking, listed companies in China refer to the corporations whose shares can be publicly circulated on stock exchanges after approval by the China Securities Regulatory Commission. Non-listed companies include two forms: limited liability companies and companies limited by shares (corporations). Listed companies must be corporations, but not all corporations are listed. In practice, joint ventures whose controlling shareholders are not foreign investors can be listed on China's two stock exchanges as foreign-invested listed companies. However, wholly foreign-controlled enterprises are not permitted to be listed on China's stock exchanges.

Currently, China's foreign-invested listed companies are of two types: B-share corporations which are listed on China's stock exchanges and issues shares for foreign investors; and those listed on overseas stock exchanges in the form of H-share (Hong Kong) and N-share (New York) corporations. Unlike direct investments such as Sino-foreign equity joint ventures, Sino-foreign co-operative joint ventures, wholly foreign owned enterprises, and foreign-funded companies limited by shares, these two types of listed companies are indirect foreign investments. Because foreign investors who buy shares are only general subscribers, not the promoters of the company, not involved in the preparation of the company, and do not appoint representatives to participate in company operation and management, they become the shareholders only through the subscription to these issued tradable shares. And, due to the free transferring of shares and high liquidity of the stock, the foreign shareholders change frequently even though the proportion of foreign shares in the registered capital of enterprises remains stable. Therefore, B-share, H-share, and N-share listed companies are foreign-invested corporations, but are not regarded as joint ventures according to China's Corporation Law. That is also the reason why these B-share, H-share, and N-share listed companies are not subject to the 'Law of the People's Republic of China on Income Tax of Enterprises with Foreign Investment and Foreign Enterprises', instead being subject to the 'Provisional Regulations on Enterprise Income Tax' with the implementation rate of 33% before the implementation of the new corporation income tax law of 2008. In practice, they are still eligible for some preferential tax policies because they are foreign investments in accordance with China's policies that seek to attract foreign investments. For example, for most of these kinds of listed companies, their nominal tax rate is 33 per cent, but their real tax rate is only around 15 per cent through implementing tax exemption or so called preferential policy of financial returns from the income tax revenue for the local governments. The empirical model of this study uses the variable of 'Foreign' which represents the proportion of shares held by foreign investors to indicate the ownership type. This proportion includes non-tradable shares held by foreign investors and tradable B, AB and AH shares.

3.5 Model development

The following model has been constructed to test the hypotheses:

$$P\_BTD_{it} = \alpha + \beta_1 Post\Delta reg_t + \beta_2 State + \beta_3 Foreign + \beta_4 PP\&E_{it} + \beta_5 INTA_{it} + \beta_6 Salesgr_{it} + \beta_7 OCF_{it} + \beta_8 R\&D_{it} + \beta_9 Leverage_{it} + \beta_{10} \ln(TA_{it}) + \mu_{it} + \varepsilon_{it}$$

The coefficient on *Post*Δ*reg* indicates the average effect of the recent tax environment changes on tax aggressiveness. A negative coefficient would suggest that, on average, regulatory changes have been effective in curbing tax-aggressiveness in the high-regulation (post-tax reform) period. On the other hand, a positive coefficient would indicate that, on average, the changes in the tax environment did not control the

increasing trend in the book-tax difference, and hence tax-aggressiveness, in the short period after the tax environment changes took place (Jimenez-Angueira 2008). The coefficient of *State* will test for a significant relationship between the level of tax aggressiveness and the percentage of state-controlled shares. The coefficient of *Foreign* will test for a significant relationship between the level of tax aggressiveness and the percentage of foreign-invested shares.

Consistent with Jimenez-Angueira (2008), to isolate the effect of the tax environment changes from other confounding factors many control variables were included in the regression model. To control for differences because of mechanical differences between GAAP and tax statutes, the equation includes the following variables: *PP&E, INTA,* and *Salesgr.* We also include the variables *OCF*, *R&D*, *Leverage* and *ln(TA)*, based on the inclusion of these variables in a number of the studies cited above.

The *PP&E* variable controls for differences in depreciation schedules between tax regulations (set by statute) and GAAP (based on managers' judgment) (Jimenez-Angueira 2008). These variables should be positively associated with *P_BTD*. The variable *INTA* controls for differences in the treatment of intangibles, including goodwill, arising from different rules for financial and tax reporting purposes, and is expected to be positively associated with *P_BTD*. *Salesgr* should exhibit a positive relationship with *P_BTD* due to differences in revenue-recognition rules between GAAP and the tax statute that generate timing differences. The variable *OCF* (operating cash flow) controls for the firms' profitability. A positive association with *P_BTD* is predicted because more profitable firms potentially have a greater incentive to engage in tax planning activities and reduce their tax burdens. The variable *R&D* controls for the double impact that qualified R&D activities have on the firm's taxable income due their deductibility and the availability of the R&D credit (Gupta and Newberry 1997; Hanlon, Mills, and Slemrod 2007). The variable *Leverage* controls for the effect of firms' financing decisions on tax-aggressiveness (or tax planning in general). A positive coefficient on leverage would be consistent with highly leveraged firms benefiting from interest expense deductions relative to their counterparts. Alternatively, a negative association between leverage and *P_BTD* would be consistent with firms using long-term debt as a substitute for other tax planning alternatives (Graham and Tucker 2006). Firm size, *ln(TA)*, was included to control for the effect of size on tax aggressiveness. A positive coefficient on *ln(TA)* would indicate a positive association between tax aggressiveness and size, which would be consistent with the findings of Mills, Newberry, and Trautman (2002) that larger firms exhibit larger book-tax differences and with the argument that larger firms have greater economies of scales in terms of tax planning (Rego 2003). Alternatively, a negative coefficient on *ln(TA)* would be consistent with the political cost hypothesis, which suggests that larger and more successful firms are more visible and subject to greater public scrutiny (Watts and Zimmerman 1986, 235).

Panel A of Table 2 presents two measures of the correlation between both alternative dependent and independent variables. Because no correlation coefficient between the independent variables is greater than 0.8, and Variance Inflation Factors (VIFs) are relatively low and smaller than 10 (Panel B), we conclude that serious multicollinearity problems are unlikely to be present in the regression model.

Panel A of Table 2 suggest that the three major indicators for tax aggressiveness are significantly related to three independent variables: *Post*Δ*reg*, *State*, and *Foreign*. For instance, *P_BTD* has a negative significant relation with *Post*Δ*reg*, which indicates that after the '2008 new tax reform' the level of tax aggressiveness became reducing. Both *P_BTD* and *DD_BTD* have a significant and negative relationship with *State*, which suggests that state-controlled ownership has a negative impact on tax aggressiveness. Both *P_BTD* and *DD_BTD* also have a significant and negative relationship with *Foreign*, which suggests a negative influence for foreign-invested ownership on tax aggressiveness. *Leverage* has a significant correlation with *P_BTD*, *DD_BTD* and *GAAP_ETR*, suggesting that financial leverage impacts the level of tax aggressiveness. *INTA* is also statistically significantly related to *P_BTD* and *DD_BTD* suggesting that intangible assets may affect tax aggressiveness.

This study uses three regression techniques: panel OLS (Model 1), panel fixed-effects (Model 2) and backward stepwise regression (Model 3). The results of the Hausman test provide a p-value that is less than 0.05, indicating that a fixed-effects model (Model 2) is preferred. A backward stepwise regression analysis (Model 3) is conducted to delete any candidate variables that are not statistically significant.

Table 2

Multicollinearity tests

Panel A: Spearman (upper triangular) and Pearson (lower triangular) correlation matrices

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1)	1.000	0.992**	-0.343**	-0.031*	-0.069**	0.038**	0.073**
(2)	0.508**	1.000	-0.338**	-0.034**	-0.057**	0.038**	0.109**

(3)	-0.008	-0.007	1.000	-0.061**	0.021	-0.042**	-0.048**
(4)	-0.019	0.004	0.001	1.000	-0.238**	-0.036**	-0.053**
(5)	-0.010	0.003	-0.012	-0.221**	1.000	0.053**	0.135**
(6)	0.020	0.022	-0.009	-0.025	0.019	1.000	0.018
(7)	0.235**	0.206**	-0.004	-0.023	0.091**	0.064**	1.000
(8)	0.113**	0.102**	-0.003	0.038**	0.042**	0.028*	0.362**
(9)	-0.001	0.000	0.002	0.000	0.024	-0.006	-0.009
(10)	0.517**	0.437**	-0.003	0.001	0.057**	0.057**	0.494**
(11)	0.050**	0.043**	-0.005	0.048**	-0.022	-0.032*	-0.016
(12)	0.195**	-0.724**	0.002	-0.028*	0.001	-0.005	-0.002
(13)	-0.017	0.012	0.005	0.017	0.261**	0.153**	-0.013

(1)	(8)	(9)	(10)	(11)	(12)	(13)
(2)	0.099**	-0.005	0.193**	0.096**	-0.341**	-0.127**
(3)	0.113**	-0.010	0.222**	0.093**	-0.319**	-0.113**
(4)	-0.019	0.068**	0.066**	-0.067**	0.099**	0.105**
(5)	0.053**	-0.038**	0.019	0.055**	-0.055**	0.010
(6)	-0.036**	-0.040**	0.035**	-0.042**	0.130**	0.227**
(7)	0.000	-0.095**	0.027*	-0.035**	0.011	0.148**
(8)	0.284**	-0.147**	0.290**	-0.078**	0.044**	0.052**
(9)	1.000	-0.030*	0.142**	0.102**	-0.064**	-0.150**
(10)	-0.006	1.000	-0.079**	0.037**	0.069**	-0.025*
(11)	0.191**	0.003	1.000	-0.021	-0.124**	0.022
(12)	0.045**	-0.002	0.017	1.000	-0.052**	-0.039**
(13)	-0.011	0.000	-0.081**	-0.013	1.000	0.426**
	-0.081**	-0.013	0.028*	-0.087**	0.002	1.000

Notes: (1) *P_BTD*; (2) *DD_BTD*; (3) *GAAP_ETR*; (4) *post*Δ*reg*; (5) *State*; (6) *Foreign*; (7) *PP&E*; (8) *INTA*; (9) *Salesgr*; (10) *OCF*; (11) *R&D*; (12) Leverage; (13) Ln(ta)

**. Correlation is significant at the 0.01 level (2-tailed). *. Correlation is significant at the 0.05 level (2-tailed).

Panel B: VIF diagnostics

Variables	Tolerance	VIF
(1) PostΔreg	.939	1.065
(2) State	.870	1.150
(3) Foreign	.969	1.032
(4) PP&E	.675	1.481
(5) INTA	.857	1.166
(6) Salesgrh	.999	1.001
(7) OCF	.748	1.337
(8) R&D	.991	1.009
(9) Leverage	.991	1.009
(10) Ln(TA)	.886	1.129
Mean VIF		1.138

4. RESULTS AND DISCUSSION

4.1. Descriptive statistics and correlation

Table 3 provides descriptive statistics for all the variables used in the model and other additional measurements for tax aggressiveness. Panel A of Table 3 presents the basic statistics by year and Panel B by ownership and share type. With respect to indicators for tax aggressiveness – *P_BTD*, *DD_BTD* and *GAAP_ETR*, Panel A shows that the mean of *P_BTD* is 0.0202 during 2007 to 2010, suggesting that there is 0.0202 permanent book-tax difference relative to total assets. Similarly the mean of *DD_BTD* is 0.0177 during 2007 to 2010, suggesting that there exists a 0.0177 'Desai and Dharmapala' (2006) measured book-tax difference relative to (lagged) total assets. The degree of tax aggressiveness reduced after the 'new tax reform' in China because the mean of *P_BTD* decreased from 0.0253 in 2007 to 0.0033 in 2008, *DD_BTD*

declined from 0.0164 in 2007 to 0.0032 in 2008. In Panel B, the mean of *P_BTD* is 0.0158 for state-controlled companies, and is smaller than the mean of 0.0231 for non-state-controlled companies. The mean of *DD_BTD* is 0.0159 for state-controlled companies, and is smaller than the mean of 0.0188 for non-state-controlled companies. The mean of *GAAP_ETR* for state-controlled companies is 0.2565 and is 0.1823 for non-state-controlled companies. This suggests that state-controlled companies are conservative in terms of their tax aggressiveness as compared to non-state-controlled companies.

Table 3

Panel A: Descriptive statistics by year

	2007		2008		2009		2010		All years	
Variables	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
P_BTD	.0253	.1305	.0033	.2071	.0100	.0649	.0376	.1268	.0202	.1400
DD_BTD	.0164	.2353	.0032	.2066	.0100	.0643	.0358	.1324	.0177	.1683
GAAP_ETR	.2053	.4546	.1420	.3253	.1912	.5833	.2857	5.0484	.2116	2.8033
PostΔreg	.0000	.0000	1.0000	.0000	1.0000	.0000	1.0000	.0000	.7800	.4130
State	.2612	.2333	.2243	.2261	.1270	.2087	.0915	.1878	.1678	.2235
Foreign	.0497	.1249	.0474	.1251	.0414	.1175	.0397	.1148	.0440	.1202
PP&E	.3590	.3688	.3223	.2742	.3039	.2467	.3604	.8100	.3372	.5109
INTA	.0538	.1014	.0579	.0877	.0608	.1030	.0719	.1455	.0619	.1145
Salesgr	2.8896	53.1784	-1.0426	59.9757	8.0794	295.6984	1.8254	27.0696	2.9711	153.5631
OCF	.0652	.1848	.0511	.2602	.0833	.1700	.0628	.3132	.0658	.2448
R&D	.0006	.0032	.0011	.0067	.0015	.0090	.0024	.01514	.0015	.0101
Leverage	.5858	3.3305	.5025	.5148	.4847	.3612	.4501	.7060	.5004	1.6338
Ln(TA)	21.4159	1.1638	21.5213	1.2228	21.5235	1.2676	21.3891	1.4754	21.4586	1.3045

Panel B: Descriptive Statistics by ownership type and share type

Variables	Ownership Type				Share Type			
	State-controlled		Non State-controlled		A-Share		B, AB and AH Shares	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
P_BTD	.0158	.08353	.0231	.1669	.0204	.1449	.01751	.0728
DD_BTD	.0159	.08323	.0188	.2057	.0176	.1749	.01784	.0723
GAAP_ETR	.2565	4.4255	.1823	.4350	.2187	2.9355	.1395	.3272
PostΔreg	.7600	.4280	.8000	.4030	.7800	.4120	.7500	.4310
State	.2838	.2443	.0920	.1704	.1581	.2183	.2669	.2503
Foreign	.0549	.1264	.0370	.1154	.0177	.0799	.3135	.1302
PP&E	.3735	.6391	.3135	.4042	.3350	.5200	.3596	.4062
INTA	.0606	.1173	.0628	.1126	.0608	.1081	.0733	.1662
Salesgr	7.1859	239.6726	.2157	37.8814	3.2355	160.9161	.2767	1.7978
OCF	.0805	.2512	.0562	.2401	.0640	.2472	.0842	.2186
R&D	.0014	.0098	.0015	.0103	.0016	.0106	.0006	.0029
Leverage	.5137	.1917	.4917	2.0953	.4965	1.7109	.5398	.1968
Ln(TA)	22.0526	1.4287	21.0702	1.0482	21.3314	1.1758	22.7610	1.7613

4.2 Regression analysis

Table 4 provides the regression results for the panel OLS (Model 1), panel fix-effects (Model 2) and backwards stepwise (Model 3) models. Both the Adjusted-R^2 for each of the three models and the *F*-statistics for each of the three models suggest that the independent variables are able to provide statistically significant information about tax aggressiveness as captured in the measures chosen.

With respect to the first hypothesis, the *t*-statistics of three models in Tables 4 are all significant and suggest that there is a negative correlation between *P_BTD* (or *DD_BTD*) and *PostΔreg*. Thus H1 is supported. This result verifies the regulatory environment theory and agency theory that suggest that the level of tax aggressiveness can be affected directly through the increased costs imposed by the new tax

regime, and indirectly by the resolution of tax-related agency issues that should bring tax aggressiveness closer to its optimal level.

In terms of the second hypothesis, as shown in Table 4, only the results of Model 1 support the argument that state-controlled ownership (*State*) and foreign-invested ownership (*Foreign*) have an impact on *P_BTD* (or *DD_BTD*). The coefficients on the *State* and *Foreign* variables in Models 2 and 3, although having the same sign as those in Model 1, are not statistically significant. Therefore H2a and H2b are not supported. The result for H2a is inconsistent with the findings of Chen, Lobo and Wang (2010) and Zheng and Han (2008), whose studies were based on data from an earlier period (and therefore under different accounting standards and tax regime requirements). This may suggest that with the process of privatisation in China differences in incentives to engage in tax aggressiveness between China's state-controlled companies and non-state-controlled companies have been decreased progressively, or have reduced significantly by regulatory change. In the case of H2b, the new 2008 enterprise income tax reform in China was expected to have an impact on foreign-invested listed companies considering that their previous preferential tax policy will be gradually removed. However, the impact of being a foreign-invested company over the timeframe involved in this study has not been statistically significant.

Table 4

Regression results (N = 6,287)

		Model (1): Panel OLS		Model (2): Panel fix-effects		Model (3): Backwards Stepwise	
Variables	Expected sign	P_BTD	DD_BTD	P_BTD	DD_BTD	P_BTD	DD_BTD
postΔreg	–	-0.0087*	-0.0098**	-0.0180***	-0.0170***	-.0750*	-.0750*
		(-2.40)	(-3.20)	(-6.18)	(-6.22)	(-2.081)	(-2.109)
State	–	-0.0243***	-0.0217***	-0.0018	-0.0062	-.0410	-.0410
		(-3.50)	(-3.72)	(-0.20)	(-0.72)	(-1.119)	(-1.108)
Foreign	–	-0.0041	-0.0079	0.0153	0.0070	-.0800*	-.0780*
		(-0.34)	(-0.76)	(0.49)	(0.24)	(-2.190)	(-2.147)
PP&E		-0.0121***	0.0062*	-0.0196***	-0.0167***	.1830***	.1880***
		(-3.52)	(2.12)	(-4.60)	(-4.16)	(4.227)	(4.361)
INTA		0.0307*	0.0283*	0.0424**	0.0509***	.0170	.0140
		(2.25)	(2.47)	(2.64)	(3.37)	(.476)	(.384)
Salesgr		-0.0000	0.0000	0.0000	0.0000	.0820*	.0810*
		(-0.23)	(0.04)	(1.07)	(1.21)	(2.368)	(2.348)
OCF		0.3170***	0.2530***	0.3090***	0.3020***	.4290***	.4320***
		(46.42)	(44.03)	(41.65)	(43.35)	(10.114)	(10.226)
R&D		0.5670***	0.4760***	0.5550*	0.548*	.0230	.0230
		(3.94)	(3.93)	(2.33)	(2.44)	(.646) ***	(.663) ***
Leverage		0.0205***	-0.0714***	0.0568***	-0.0569***	-.1220	-.1190
		(23.07)	(-95.47)	(60.58)	(-64.43)	(-3.367)	(-3.296)
ln(TA)		-0.0018	0.0021*	0.0009	0.0033	-.0200	-.0200
		(-1.54)	(2.15)	(0.27)	(1.04)	(-.526)	(-.528)
Constant		0.0404	-0.0020	-0.0315	-0.0291		
		(1.61)	(-0.09)	(-0.43)	(-0.43)	(1.681)	(1.698)

t statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.3 Robustness check

In addition to the above two measures for tax aggressiveness—*P_BTD* and *DD_BTD*—another of the three measures *GAAP_ETR* is used in the robustness test. As B-, AB- and AH- share companies apply much more stringent requirements for information disclosure, and so may display differences in tax aggressiveness, the type of cross-listed share is used a control variable in the robustness test. The final results of regressions in the robustness check are consistent with the results reported above.

5. CONCLUSIONS

Corporate tax aggressiveness is a manifestation of the agency problem. Existing research has thus examined the motivation for this tax aggressive behaviour by corporates and the impact of internal governance mechanisms often from the agency perspective. Much of this research has had a U.S. focus. However, research on tax aggressiveness in case of an economy in the process of transition to a market-oriented economy is limited, as has been the opportunity to study the impact of significant tax regulatory reform on this behaviour. It is in these two areas that this paper has made its contribution to the literature.

This study has been guided by agency, effective tax planning and tax avoidance theories in assessing the impact of tax regulatory change on tax aggressiveness in China. The effectiveness of changes in China's tax regime, and thus potentially in the incentive provided to corporates to engage in tax aggressiveness, have been assessed using a panel data sample derived from 1,900 companies listed on China's Shanghai and Shenzhen Stock Exchanges. The timeframe chosen was 2007 to 2010 (providing 6,287 firm-year observations), period that provides the opportunity to utilise a 'natural experiment platform' given the 2007 introduction of the *Accounting Standards for Business Enterprises No.18—Corporate Income Tax Accounting* and the 2008 implementation of the new *Enterprise Income Tax Law*. The chosen companies exhibit different ownership structures, being comprised of state-controlled, foreign-invested and non-state-controlled enterprises listed in China.

Several implications can be drawn from this study. Our results indicate that the tax aggressiveness of listed companies as measured by the book-tax gap measure has reduced as a result of China's 2008 *Enterprise Income Tax reform*. This shows the potential for tax policy change and its enforcement to have a significant impact on tax aggressiveness in a transition economy context. We leave for future study the market reaction of these changes in tax aggressiveness, and thus their impact and importance to equity values.

We find that a lack of statistical support for the importance of ownership structure on tax aggressive behaviour in China in contrast to earlier studies such as that of Zheng and Han (2008) who identify different tax planning behaviours for China's state-controlled and private listed companies during the 2002 to 2005 period (thus predating the tax and accounting regime changes in this study). This may suggest that with the process of privatisation in China differences in incentives to engage in tax aggressiveness between China's state-controlled companies and non-state-controlled companies have been decreased progressively, or have reduced significantly by regulatory change. However, we suggest that our results in this area be treated with some caution. Thus, it is necessary to identify some of the limitations to this study that may impact on the reliability of our conclusion in this area (impact of ownership). Firstly, there is matter of the special criteria for categorising state-controlling and foreign invested ownerships in China, making classification difficult. Secondly, a lack of conclusive results re ownership may call for a different strategy in examining differences between state-controlled and non-state-controlled enterprises, and between foreign-invested and domestically-controlled enterprises, under changes to China's tax regulatory regime. Finally, future analysis may consider use of a balanced panel data set which, although more restrictive a sample, may better allow the impact on individuals types of ownership structure to be more accurately assessed.

REFERENCES

1. Allen, F, Qian, J & Qian, M (2005), "Law, finance, and economic growth in China", *Journal of Financial Economics,* 77(1), 57-116.
2. Badertscher, B, Katz, SP, Rego, SO & School, HB (2010), *The Impact of Private Equity Ownership on Portfolio Firms" Corporate Tax Planning*, Harvard Business School.
3. Chen, H, Chen, JZ, Lobo, GJ & Wang, Y (2010), "Effects of audit quality on earnings management and cost of equity capital: Evidence from China".
4. Chen, KP & Chu, CYC (2005), "Internal control versus external manipulation: a model of corporate income tax evasion", *RAND Journal of Economics,* 36(1), 151-164.
5. Chen, S, Chen, X, Cheng, Q & Shevlin, T (2010), "Are family firms more tax aggressive than non-family firms?" *Journal of Financial Economics,* 95 (1), 41-61.
6. Crocker, KJ & Slemrod, J (2005), "Corporate tax evasion with agency costs", *Journal of Public Economics,* 89 (9-10), 1593-1610.

7. Desai, MA (2003), "The divergence between book and tax income", *Tax Policy and the Economy,* 17(1), 169-206.
8. Desai, MA & Dharmapala, D (2006), "Corporate tax avoidance and high-powered incentives", *Journal of Financial Economics,* 79(1), 145-179.
9. Desai, MA, Dyck, A & Zingales, L (2007), "Theft and Taxation", *Journal of Financial Economics,* vol. 10978.
10. Desai, MA & Dharmapala, D (2009), "Corporate tax avoidance and firm value", *The Review of Economics and Statistics,* 91(3), 537-546.
11. Frank, M, Lynch, L & Rego, S (2008), "Does aggressive financial reporting accompany aggressive tax reporting (and vice versa)", *The Accounting Review*.
12. Graham, JR & Tucker, AL (2006), "Tax shelters and corporate debt policy", *Journal of Financial Economics,* 81(3), 563-594.
13. Hanlon, M (2005), "The persistence and pricing of earnings, accruals, and cash flows when firms have large book-tax differences", *The Accounting Review,* 80(1), 137-166.
14. Hanlon, M & Slemrod, J (2009), "What does tax aggressiveness signal? Evidence from stock price reactions to news about tax shelter involvement", *Journal of Public Economics,* 93(1-2), 126-141.
15. Jensen, MC & Meckling, WH (1976), "Theory of the firm: Managerial behavior, agency costs and ownership structure", *Journal of Financial Economics,* 3(4), 305-360.
16. Jimenez-Angueira, CE (2008), "Tax Aggressiveness, Tax Environment Changes, and Corporate Governance", PhD Thesis, UNIVERSITY OF FLORIDA.
17. Jin, X & Lei, Gy (2011), "Audit Supervision, Property of Ultimate Controller and Tax Aggressiveness", *Auditing Research*, 5, 8.
18. Khurana, IK & Moser, WJ (2009), *Shareholder investment horizons and tax aggressiveness*, Working paper, University of Missouri.
19. Kim, J-B, Li, Y & Zhang, L (2011), "Corporate tax avoidance and stock price crash risk: Firm-level analysis", *Journal of Financial Economics,* 100(3), 639-662.
20. Lanis, R & Richardson, G (2010), "The effect of board of director composition on corporate tax aggressiveness", *Journal of Accounting and Public Policy*.
21. Liu, GS & Sun, P (2003), "Identifying ultimate controlling shareholders in Chinese public corporations: an empirical survey", *Royal Institute of International Affairs, Asia Program Working Paper*, 2.
22. Mills, LF (1998), "Book-tax differences and Internal Revenue Service adjustments", *Journal of Accounting Research,* 36(2), 343-356.
23. Moore, J (2007), "Do Board and/or Audit Committee Independence Affect Tax Reporting Aggressiveness? ", *Working Paper*
24. National Bureau of Statistics of China (2011), *China Statistical Yearbook 2011*, Government Finance, Table 8-2 Taxes, accessed http://www.stats.gov.cn/english/statisticaldata/yearlydata/.
25. OECD (2009), "General Administrative Principles: Corporate governance and tax management ", *Forum on Tax Administration, OECD Tax guidance series: Corporate governance and tax management.*
26. OECD (2011), *Revenue Statistics 2011*, OECD Publishing. http://dx.doi.org/10.1787/rev_stats-2011-en-fr (ISBN 978-92-64-12286-4 (PDF)).
27. Phillips, J, Pincus, M & Rego, SO (2003), "Earnings management: New evidence based on deferred tax expense", *Accounting review,* 78(2), 491-521.
28. Phillips, JD (2003), "Corporate Tax-Planning Effectiveness: The Role of Compensation-Based Incentives", *The Accounting Review,* 78(3), 847-874.
29. Rego, S & Wilson, R (2009), *Executive compensation, tax reporting aggressiveness, and future firm performance*, Working paper, University of Iowa.
30. Rego, S & Wilson, R (2010), "Executive Compensation, Equity Risk Incentives, and Corporate Tax Aggressiveness", *Unpublished paper, University of Iowa*.
31. Rego, SO (2003), "Tax-Avoidance Activities of U.S. Multinational Corporations", *Contemporary Accounting Research,* 20(4), Winter2003, 805-833.
32. Rego, SO & Wilson, R (2010), "Executive Compensation, Equity Risk Incentives, and Corporate Tax Aggressiveness".
33. Richardson, G & Lanis, R (2007), "Determinants of the variability in corporate effective tax rates and tax reform: Evidence from Australia", *Journal of Accounting and Public Policy,* 26(6), 689-704.
34. Rohaya, MN, Nor"Azam, M & Barjoyai, B (2008), "Corporate effective tax rates: a study on Malaysian public listed companies", *Malaysian Accounting Review,* 7(1), 1-20.
35. Scholes, M & Wolfson, MA (1992), "Taxes and business strategy", *Englewood Cliffs, NJ*.
36. Scholes, MS, Wilson, GP & Wolfson, MA (1990), "Tax planning, regulatory capital planning, and financial reporting strategy for commercial banks", *Review of Financial Studies,* 3(4), 625.
37. Shan, YG (2009), *Corporate disclosures of related-party relationships and transactions in China: agency, governance, legitimacy and signalling influences*.
38. Shevlin, T (2001), "Corporate tax shelters and book-tax differences", *Tax L. Rev.,* 55, 427.

39. Slemrod, JB (2004), *The economics of corporate tax selfishness*, National Bureau of Economic Research Cambridge, Mass., USA.
40. Wang, Y (2002), "The Sensitivity Analysis of the Changes of China's Corporate Income Tax Rate for Listed Companies ", *Economy Research,* no. 009, 74-80.
41. Weisbach, DA (2001), "Ten truths about tax shelters", *Tax L. Rev.,* 55, 215.
42. Wilson, RJ (2007), *An examination of corporate tax shelter participants*, University of Washington,
43. Wu, L & LI, C (2007), "Tax Return Policy" for the Corporate Income Tax and the Effectiveness of Tax Policy", 4, 61-73.
44. Ye, P (2008), "The New Enterprise Income Tax Law and Reform of Taxation in China ", *China"s Administrative Management* no. 007, 8-10.
45. Zheng, HX & Han, MF (2008), "Different tax planning behaviour based on ownership structure of listed companies - the empirical evidence from Chinese state-owned listed companies and private listed companies", *China Soft Science*, no. 009, 122-131.