

## Determinants of Effective Tax Rate of China Publicly Listed Companies

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**[Abstract]** This research studied cash effective income tax rate (cash ETR), GAAP effective income tax rate (GAAP ETR), and sales tax and addition effective tax rate (STA ETR) for China publicly listed companies. The data is from 2007-2011. The mean for cash ETR, GAAP ETR, and STA ETR are 23.07%, 19.98%, and 5.29%, respectively. We do not document any influence of the big four auditors on ETRs in all categories. We also do not document any influence of international ownership on ETRs in all categories. Industry, asset mix, leverage, size, and state ownership are factors that affect ETRs.

**[keywords]** Tax rate; listed company

### Introduction

The effective tax rate (ETR) implied on companies is a subject of considerable discussion in the US and around the world. There seems to be a competition among countries to lower their ETR in order to attract more business, and thus to improve their economies. The US seems to be losing this competition. According to Controller's Report (2011), Forbes Global 2000 companies headquartered in the US had an average corporate ETR of 27.7 percent for tax years 2006-2009. Similar companies headquartered in other countries had an average ETR of only 19.5 percent. Reportedly, the US statutory corporate tax rate was 14 percentage points higher than the average of the 34 countries in the Organization for Economic Co-operation and Development (OECD). According to the Wall Street Journal (McKinnon & Thurm, 8/28/2012), more US companies are changing their official incorporation location to other countries, largely due to the lower effective tax rates offered abroad. One company estimated that a drop in ETR from 28% to 23% will increase its profit by 100 million USD per year.

Although China is not a current OECD member, many companies have an interest in exploring investments and partnerships in China. Analyzing tax structure in China, and evaluating the ETR levied on companies in China is critical to avail such investment opportunities. The purpose of this paper is to identify the basic types of taxes levied on companies in China and to analyze the factors that influence the sales tax and corporate income tax ETR of Chinese companies, with and without, foreign investment. This paper uses data from China publicly listed companies.

There is considerable literature that examines the relationship of ETR with industry, firm size, firm leverage, asset mix, political connections, and ownership structure in various countries. This study examines the influence on ETR of firm size, industry, year, firm leverage, asset mix, auditor and ownership structure. Data were collected for all companies listed on the two major Chinese stock exchanges over the 5 year period from 2007 through 2011. All financial information for this period was prepared based on International Financial Reporting Standards (IFRS), which has been adopted in China since January 1, 2007. These data included information from over 1000 publicly listed companies, and over 4000 company years. We included all industries in our data collection.

### Chinese Tax System

China imposes three major taxes: sales and adjunct tax, value added tax, and income tax. The tax system in China has gone through a major reform. The new tax system that went into effect in 2011 eliminated many favorable tax treatments for international companies. Even before that, in 2007, China streamlined the corporate income tax for domestic and international funded companies to level out the playing field. (Ministry of Finance of People's Republic of China, 2009) Thus, theoretically, our research time period (2007-2011) should show little or no evidence of favorable tax treatment to companies with international ownership.

### ***Corporate Income Tax***

The basic corporate tax rate currently is 25%. Eligible small business has a lower tax rate of 20%. Eligible high-tech companies enjoy a tax rate of 15%. The tax rate preference for international companies was reduced starting in 2007 and has been eliminated as of 2011. Currently, corporate income tax revenue is shared by local and federal government with local government retaining 40%.

### ***Sales Tax and Additional Taxes***

The sales tax rate varies from 3% to 20% depending on the industry. Sales tax in China is included in the sales price and is remitted to the government by the seller. The current sales tax rate is 3% for transportation, construction, post and telecommunications, culture and sports. It is 5% for other industries except entertainment. The entertainment industry sales tax rate can be as high as 20%, though the local government has the authority to lower it. For example, starting 7/1/2012, Tianjin province has lowered its sales tax rate for the entertainment industry from 20% to 5%.

In addition to sales tax, a company may also bear a consumption tax. Consumption tax is also included in sales price and remitted by the seller to the taxing authority. Consumption tax is designed to regulate the consumption structure. Most commodities do not have consumption tax. For commodities that have consumption tax, the rate depends on the commodity. It can vary from 1% to 56% of the value of the commodity or it can be a fixed amount. The highest consumption tax is imposed on cigarettes, and varies from 30% to 56%. Consumption tax for cosmetic products is 30%. It is 5 to 25% for alcoholic beverages. Besides consumption tax, additional taxes may also include resource tax, education tax, land appreciation tax, city development tax, etc. Currently, sales tax and addition is a local tax revenue.

### ***Value Added Tax***

The basic value added tax rate is 13% for domestic products, 17% for imported products, and 0% for exported products. There are exceptions to the basic value added tax rate. Such as, China does not encourage crude oil exporting. Thus, crude oil exporting does not enjoy a favorable value added tax rate. Value added tax revenue is currently shared between the local and federal government. Local government retains 25%. Value added tax is not included in the sales price. It is separately paid by the consumer and is not reported by the publicly listed companies, we thus cannot get value added tax information. Therefore, this paper only analyzes the sales and adjunct tax, and income tax obligations of publicly listed companies. Although studies have been conducted to analyze the impact of various factors on ETR, this paper is the first to analyze the specific impact of sales and adjunct taxes of publicly listed companies in China. Details of Chinese taxation laws can be found in China State Administration of Taxation publications.

## **Literature Review**

There have been a many studies on the impact of various factors on ETR. Most studies address the factors used in this paper.

### ***Studies on US firms***

Dyreg, Hanlon, Maydew (2010) tracked the movement of 908 executives across 1,138 US firms during the years 1992 to 2006. They found that individual executives play a significant role in determining ETR. The difference between the top and bottom quartiles showed an 11 percent difference in GAAP ETR. Dyreg, Hanlon, Maydew (2008) used the long-run cash ETR to examine (1) the extent to which some firms are able to avoid taxes over periods as long as ten years, and (2) the extent to which one-year tax rates are predictive for long-run tax avoidance. In their sample of 2,077 US firms, they found there is considerable variation in tax avoidance. For example, approximately one-fourth of the sample firms were able to maintain long run cash effective tax rates below 20 percent, compared to a sample mean tax rate of approximately 30 percent. Likewise, McGuire, Omer and Wang (2012) found that tax-specific industry expertise of the external audit firm results in greater tax avoidance, and that an audit firm's overall

expertise also results in greater tax avoidance.

Olhoft (1999) data were obtained from Compustat for the years 1990 through 1997, both U.S. multinational and U.S. domestic corporations. Olhoft (1999) examined which variables play key role for firms that avoid more income taxation, resulting in lower effective tax rates (ETR, defined as the ratio of current income tax expense to pre-tax accounting income). Holding the income constant, larger firms (total net sales) pay more tax per dollar of income than smaller firms do. However, firms with greater income pay less tax per dollar of income than firms with less income do. Hence, higher income is associated with income tax avoidance, larger firm size is not. Multinational firms have a stronger negative relationship between income and ETRs, suggesting that multinational companies avoid more tax per dollar of income than U.S. domestic companies.

Stickney and McGee (1982) defined ETR as total income taxes payable divided by book income before taxes adjusted for the effect of timing differences. Using the data from Compustat between years 1978 and 1980 for U.S. companies, the authors found that Capital intensity, leverage, and natural resources involvement indicated lower ETR. Whereas foreign operations and size were a less important indicator of lower ETR. Stanfield (2011) used data from Compustat from 1992 to 2009 for U.S. firms. He found greater tax avoidance or lower ETR (cash taxes paid divided by its pretax income) for firms with insufficient cash. Stanfield also found that increased tax exemptions (tax avoidance) were available for firms that meet or just beat the consensus cash flow forecast.

### ***Studies on Chinese firms***

Liu and Cao (2007) studied determinants of ETR for 425 listed companies in China's stock market for the seven-year period 1998–2004. They considered firm size, leverage, asset mix, profitability, ownership structure, and overemployment. They found that firm size and capital intensity have no significant effect on ETR, leverage has a negative impact and ETR tends to be smaller for firms with overemployment of labor. This last finding seems to be caused by government promoting employment. They define ETR as  $(\text{Tax expense} - \text{deferred tax provision}) / \text{EBIT}$ . They also found that the larger the share of ownership by the largest shareholder, the larger the ETR. Wu, Wang, Luo and Gillis (2012) examined all non-financial public companies listed in China's A-share market between 1998 and 2006 to determine how state ownership, tax status and firm size affect ETR. They found that privately controlled firms had a higher ETR than state-controlled firms.

### ***Other Studies***

Heshmati, Johansson, and Bjuggren (2010) analyzed the effects of ETRs on the size distribution of Swedish firms from 1973 – 2002. Time and industry effects were considered. They found that ETRs differ by firm size, industry and over time. Smaller firms had a higher ETR than larger firms and there was inequality in mean and variance of ETRs between industrial sectors. They conclude that ETRs affect the size distribution of firms as well as the composition of industries and that the Swedish tax system favors capital-intensive sectors and firms. Sebastian (2010) wanted to determine whether Romanian companies actually experienced an impact on ETR with the statutory tax rate cuts that took place. They found that ETR was consistently less than the statutory rate and that, by industry, general commerce had the lowest ETR and the energy sector had the highest ETR.

Noor, Mastuki, and Bardai (2008) studied a sample of 294 large Malaysian companies (1470 firm-years) between the years 2000 to 2004. They found that real estate, trading and services, and construction companies had higher ETRs and that lower ETRs were associated with highly leveraged companies and with companies that had greater investments in fixed assets and had extensive foreign operations.

Hsieh (2012) used data from the Taiwan Economic Journal data base, which included listed companies in the two largest stock markets in China, the Shanghai Security Exchange, and the Shenzhen Security Exchange. Data were collected from 1998 through 2001. Hsieh (2012) defined ETR as tax expenses minus deferred tax expense divided by profit before interest and tax paid. Using leverage (total liabilities divided by total asset value), capital intensity (net fixed assets divided by total assets), return on

assets (pre-tax profits divided by total assets), and firm size (total asset value) as variables, Hsieh found that firm size was not an indicator of lower ETR and that ETR was sensitive to return on assets (pre-tax profits divided by total assets), capital intensity (net fixed assets divided by total assets), inventory intensity (inventory divided by total assets), and leverage (total liabilities divided by total asset).

The relationship of effective tax rate and size (arranged by log of sales) has been extensively researched (Heshmati, Johansson, & Bjuggren, 2010; Zimmerman, 1983; Rego, 2003; Liu & Cao, 2007). Industry and effective tax rate also have been well studied (Sebastian, 2010; Heshmati, Johansson, & Bjuggren, 2010; Noor, Mastuki, & Bardai, 2008). The specific year we are researching could have some effect on the effective tax rates (Dyreg, Hanlon, Maydew 2010). We thus included year as a variable.

Firm leverage (proxied by total liability/total asset) could have an effect on effective tax rate since interest is tax deductible (Liu & Cao, 2007; Noor, Mastuki, & Bardai 2008). Asset mix (proxied by long term assets/total assets; long term assets include fixed and intangible assets) could influence effective tax rate since the more capital intense the company is, the more depreciable assets the company will have (Liu & Cao 2007; Noor, Mastuki, & Bardai 2008).

Ownership structure could affect effective tax rate. Dyreg, Hanlon, and Maydew (2010) documented that individual executives have significant influence on effective tax rate. We suspect the unique ownership structure of a company could influence effective tax rate of a company for the same reason. In this study, we identify state-ownership (defined as more than 50% state owned), and international-ownership (any international ownership). Of course, a company can be both state owned or privately owned and also have international ownership. We will investigate the interaction of state ownership and international ownership. Different ownership structures could result in different corporate cultures and thus, different levels of aggressiveness of tax avoidance.

Derashid and Zhang (2003) studied the effect of state ownership on effective tax rate in Malaysia with no significant findings. Liu and Cao (2007) documented that the higher the largest shareholder's ownership percentage, the higher the effective tax rate. Lastly, in order to attract international investment, China gave tax incentives to companies with sole or partial international investment prior to 2007. Since then, China has streamlined corporate income tax for domestic and international funded companies. China further eliminated favorable tax treatment to companies with international ownership in 2011. Local governments provide various incentives for international investment as well. The tax benefits are rather complicated and inconsistent from year to year and from region to region. As we mentioned several times, China has eliminated most favorable tax treatment for foreign investment. However, we suspect there still might be some favorable local tax policies to attract foreign investment. Taking all the above into consideration, we are investigating the impact of state ownership and international ownership on ETRs.

State owned shares could not be transferred freely in the stock market before 2005. China started major reform in 2005 to make state ownership transferable (China Securities Regulatory Commission, etc., 2005). After the reform, separate state ownership percentage information is no longer available. Therefore, we decided to look at the historical ownership structure of a company. If historical state ownership has been more than 50% in a company, we will consider it under control of the state.

For international ownership, we divide the companies into two groups: companies with international ownership and companies without international ownership. We have tried to plot the international ownership against Cash ETR, GAAP ETR, and sales tax and addition and did not find a natural break point. Thus, we do not believe the percentage of international ownership significantly affects the tax benefits companies might be receiving.

Auditors of the company could potentially affect the tax rate of the company. McGuire, Omer and Wang (2012) concluded that companies engage in greater tax avoidance when their external audit firm is a tax expert. Reviewing the auditor information of the publicly listed companies revealed that the big four accounting firms were the auditors for about 9% of all the observations. The remaining observations are for companies that were audited by domestic auditing firms. Although there is no previous research on this subject, we believe the big four auditing firms might have different corporate cultures from the domestic auditing firms, and thus might provide different tax strategies to their customers compared with domestic auditing firms.

## Methodology

### *Effective Income Tax Rate*

We manually collected data from sina.com.cn. This website provides financial information for China publicly listed companies. We are aware that various databases are available. But for the purpose of this study, we needed some specific information that were not available elsewhere. We used two standard measures to define effective tax rate, which have been adopted by many other studies (Dyreng, Hanlon, and Maydew 2010; Dyreng, Hanlon, and Maydew 2008). First, the effective corporate income tax rate defined under GAAP as, total tax expense divided by pre-tax accounting income. Second, the effective corporate income tax rate defined on a cash basis as cash taxes paid divided by pre-tax accounting income. The first measure captured tax expense for financial reporting purposes (hereafter GAAP ETR). The second measure captured cash based tax expense (hereafter cash ETR).

The two measures of effective tax rate were then separately regressed against the variables of this study, which are firm size, industry, year, leverage, asset mix, ownership structure, and stature of auditors. The relationship of effective tax rate and firm size (sorted by log of sales) has already been extensively researched in the Western context (Heshmati, Johansson, & Bjuggren, 2010; Zimmerman, 1983; Rego 2003; Liu & Cao, 2007). We researched this variable strictly within the context of Chinese tax laws. Likewise, industry and effective tax rate also have been well studied in the Western context (Sebastian 2010; Heshmati, Johansson, & Bjuggren, 2010; Noor, Mastuki, & Bardai, 2008). We studied these variables strictly within the context of Chinese tax laws. Since a specific tax year could have some affect on the effective tax rates (Dyreng, Hanlon, Maydew, 2010), we included tax year as a variable as well. We chose firm leverage as a variable as the leverage factor could have an effect on effective tax rate since interest is tax deductible (Liu & Cao 2007; Noor, Mastuki, & Bardai 2008).

Asset mix (proxied by long term assets/total assets; long term assets include fixed and intangible assets) could influence effective tax rate since the more capital intense the company is, the more depreciable assets the company will have (Liu & Cao 2007; Noor, Mastuki, & Bardai 2008). Ownership structure could affect effective tax rate. Dyreng, Hanlon, and Maydew (2010) documented that individual executives have significant influence on effective tax rate. We suspect the unique ownership structure of a company could influence effective tax rate of a company for the same reason. In this study, we identify state-ownership (defined as more than 50% state owned), and international-ownership (any international ownership). Of course, a company can be both state owned or privately owned and also have international ownership. We will investigate the interaction of state ownership and international ownership. Different ownership structures could result in different corporate cultures and thus, different levels of aggressiveness of tax avoidance.

### *Effective Sales and Adjunct Tax Rate*

The unique thing about China sales and adjunct taxes is that these taxes are included in the sales price and reported as an expense by the seller on their income statements. We thus are able to analyze the sales and adjunct tax information the same way as we do with effective corporate income tax rate.

## Results

### *Descriptive Statistics*

After deleting extreme observations, our final dataset consists of 4037 observations across five years (2007-2011) from over 1000 companies. We consider negative cash or GAAP ETRs as extreme. We also consider cash or GAAP ETRs above 100% as extreme. The above situations did occur in our observations. We show the mean and median for sales tax and addition ETR (STA ETR), cash ETRs, and GAAP ETRs in Table 1.

As we discussed previously, the basic sales tax rate per the tax code is 3-20%, and there are other taxes included in the sales tax and addition category. However, the actual rate of sales tax and addition reported on company financial statements is amazingly low. The median is only 0.84%, with a mean of 5.29%. This is inconsistent with the tax code. Currently, sales tax and addition is collected and retained

by the local government. The federal government does not share it. The amazingly low STA ETR might be due to the various favorable tax rates the local governments offer in order to attract companies.

The cash ETR mean is 23.07% and median is 18.70%. The mean and median for the GAAP ETR are 19.98% and 18.46%, respectively. As we mentioned earlier, the basic income tax rate is 25% with favorable rates for qualified companies. The ETRs seem to agree with the tax code. Liu and Cao (2007) find that ETRs for China listed companies are about 15%, which is lower than our finding. The Liu and Cao (2007) findings are based on 1998-2004 data. The tax code has undergone significant changes since 2004. Also, Liu and Cao (2007) define their ETRs differently. As we mentioned in our introduction, Forbes Global 2000 companies headquartered in the US had an average corporate ETR of 27.7 percent for tax years 2006-2009, which is higher than China publicly listed companies; although the Forbes definition of ETR could be somewhat different from our definition of ETR. The listed companies have a balanced approach in regard to financing. Overall, listed companies tend to rely equally on borrowing and self-financing.

Table 1 lists the number of observations for state controlled firms, for companies with international ownership and for companies with big four firms as auditors. Table 1 also gives the number of observations by industry.

Table 1  
*Descriptive Statistics*  
Industry Breakdown: Number of observations per industry

Agriculture	48
Mining	132
Manufacturing	2146
Utilities	200
Construction	71
Transportation & Storage	211
Technology & Telecommunications	184
Wholesale & Retail	424
Financials	43
Real Estate	380
Service	121
Media	33
Multi-Industry	44
Total Observations	4037

### ***Sales Tax and Addition Effective Tax Rate (STA ETR)***

We investigated the dual presence of state control and international ownership on Cash ETR, GAAP ETR and STA ETR and did not document any significant findings. Therefore, the following results about STA ETR, Cash ETR, and GAAP ETR do not include the interaction of state control and international ownership as a factor. Despite the surprisingly low rate, the overall model explained about 40% of the rate at which companies pay sales tax and addition (Table 2). The bigger the company, the lower the STA ETR. This might be because local governments have various favorable tax treatments for bigger companies in order to attract them. Firms in the agricultural industry have a significantly lower STA ETRs, while firms in the real estate industry pay a significantly higher STA ETRs. The ownership composition of a company does not affect its rate.

Table 2

*Sales Tax and Addition ETR*Overall model:  $p < 0.0001$ ; Adjusted  $R^2 = 0.4011$ 

Independent Variable	Estimate	t Value	Pr >  t
Intercept	0.22805	8.36	<0.0001
BigFourAuditor	0.00791	1.42	0.1570
Size	-0.00901	-7.93	<0.0001
Agriculture	-0.05545	-2.57	0.0101
Mining	-0.00876	-0.48	0.6279
Manufacturing	-0.02375	-1.51	0.1304
Utility	-0.02447	-1.41	0.1579

	Mean	Median	
Sales tax and addition ETR	5.29%	0.84%	
Corporate income tax: Cash ETR	23.07%	18.70%	
Corporate income tax: GAAP ETR	19.98%	18.46%	
Leverage	50.70%	51.48%	
Asset mix	30.61%	28.01%	
Auditors	Big four clients	Other	
	386 observations	3,651 observations	
Ownership	State-controlled	Private	
	1,658 observations	2,379 observations	
Ownership	With international ownership	Domestic	
Construction	-0.00249	-0.13	0.9000
Transportation & Storage	-0.00130	-0.07	0.9406
Technology & Telecommunication	-0.01538	-0.89	0.3733
Wholesale & Retail	-0.00361	-0.22	0.8245
Financials	0.02033	0.92	0.3600
Real Estate	0.03377	2.06	0.0395
Service	0.00152	0.08	0.9338
Media	-0.02063	-0.86	0.3880
2007	-0.00718	-1.50	0.1336
2008	-0.00077063	-0.16	0.8749
2009	0.22832	32.27	<0.0001
2010	0.00117	0.25	0.8056
Leverage	0.00537	0.55	0.5815
AssetMix	-0.01154	-1.34	0.1790
StateControlled	0.00294	0.86	0.3917
InternationalOwnership	0.00570	0.92	0.3573

**Cash ETR**

Overall, we are able to explain 3.5% of the variation in cash ETR. (See Table 3) The real estate industry again has a significantly higher rate. The size of a company does not show up as a factor for cash ETR. This is consistent with Liu & Cao (2007). State controlled companies have significantly higher cash ETRs. This finding is consistent with Zeng (2010). The more a company relies on debt financing, the higher its cash ETR. This is opposite of Liu & Cao (2007), which uses China listed firm 1998-2004 data. It is also opposite of Noor, Mastuki, and Bardai (2008) findings, which use Malaysian listed company data. Also, companies with higher fixed asset percentages have higher cash ETRs. This is opposite of Noor, Mastuki, and Bardai (2008) findings with Malaysian data. Liu & Cao (2007) does not show any significant impact of asset mix on ETR. Both Liu & Cao (2007) and Noor, Mastuki, and Bardai (2008) define ETR differently from us, so care should be used while making comparisons.

Table 3

**Cash ETR**Overall model:  $p < 0.0001$ ; Adjusted  $R^2 = 0.0345$ 

Independent Variable	Estimate	t Value	Pr >  t
Intercept	0.09523	1.91	0.0567
BigFourAuditor	-0.01741	-1.70	0.0890
Size	0.00098512	0.47	0.6362
Agriculture	0.01934	0.49	0.6242
Mining	0.00602	0.18	0.8559
Manufacturing	0.01428	0.50	0.6195
Utility	0.00213	0.07	0.9465
Construction	-0.00299	-0.08	0.9342
Transportation & Storage	-0.02388	-0.75	0.4536
Technology & Telecommunication	0.00911	0.29	0.7735
Wholesale & Retail	0.04636	1.55	0.1204
Financials	0.00416	0.10	0.9186
Real Estate	0.05918	1.97	0.0490
Service	0.00902	0.27	0.7879
Media	-0.01697	-0.39	0.6983
2007	0.00296	0.34	0.7354
2008	0.05948	6.63	<0.0001
2009	0.02825	2.18	0.0294
2010	0.01678	1.92	0.0551
Leverage	0.09848	5.52	<0.0001
AssetMix	0.07407	4.71	<0.0001
StateControlled	0.01554	2.47	0.0135
InternationalOwnership	0.00783	0.69	0.4905

**GAAP ETR**

Overall, we are able to explain 10.8% of the variation in GAAP ETR. (See Table 4) Although size of companies do not significantly affect cash ETRs, bigger firms have significantly higher GAAP ETRs. The agriculture industry has significantly lower GAAP ETR, while construction, wholesale & retail, and real estate have significantly higher GAAP ETRs. Although state controlled firms have significantly higher cash ETRs, their GAAP ETRs are not significantly different from other firms. Leverage and asset



mix have the same effect on GAAP ETR as cash ETR. The more companies rely on debt financing, the higher their GAAP ETRs. Also, the higher a company's fixed asset percentages, the higher its GAAP ETR.

Table 4

## GAAP ETR

Overall model:  $p < 0.0001$ ; Adjusted  $R^2 = 0.1080$ 

Independent Variable	Estimate	t Value	Pr >  t
Intercept	-0.04909	-1.45	0.1459
BigFourAuditor	0.00363	0.53	0.5993
Size	0.00764	5.43	<0.0001
Agriculture	-0.05398	-2.02	0.0430
Mining	0.04364	1.95	0.0513
Manufacturing	-0.01293	-0.67	0.5058
Utility	-0.01620	-0.76	0.4499
Construction	0.04912	2.01	0.0450
Transportation & Storage	-0.00577	-0.27	0.7886
Technology & Telecommunication	-0.02693	-1.26	0.2080
Wholesale & Retail	0.04865	2.41	0.0159
Financials	0.02761	1.00	0.3152
Real Estate	0.07157	3.53	0.0004
Service	0.02415	1.07	0.2861
Media	-0.01040	-0.35	0.7252
2007	0.06155	10.40	<0.0001
2008	0.02657	4.39	<0.0001
2009	0.04670	5.33	<0.0001
2010	0.02650	4.49	<0.0001
Leverage	0.05686	4.72	<0.0001
AssetMix	0.08709	8.19	<0.0001
StateControlled	-0.00114	-0.27	0.7886
InternationalOwnership	-0.01420	-1.85	0.0642

### Conclusion

The real estate industry has significantly higher STA ETR, cash ETR and GAAP ETR. The agriculture industry has significantly lower STA ETR and GAAP ETR. Although the tax code does not specify different tax rates for these two industries, we suspect some different treatments in the application phase. The higher ETRs in all categories for real estate industry reminded us about the China real estate bubble rumor. Further research about the application phase of the tax code will provide more insight.

Leverage is positively related to both cash ETR and GAAP ETR. The more companies rely on debt financing, the higher their ETRs. However, in a follow up study which investigates the relationship on a long-term basis, no significant findings were documented between leverage and long run ETR.

Asset mix is also positively related to both cash ETR and GAAP ETR. Companies with heavier capital concentrations have higher ETRs. The follow up study on the long term effect confirms that asset mix is significantly positively related with long run ETR.

The findings about leverage and asset mix are contra-intuitive. Interest and depreciation expenses are tax deductible and should reduce tax. Further studies should be done to investigate why the opposite is true. We do not find any significant influence of international ownership on ETR, which is expected

because of the elimination of favorable tax treatment for international ownership.

We do document significantly higher cash ETRs, although not GAAP ETRs, for state controlled firms. In a follow-up study, we found that in the long run state controlled firms do not pay higher ETRs. Thus, we believe that GAAP ETR will predict the long run ETR.

As to size of the firm, bigger companies do not have a higher Cash ETRs but have a significantly higher GAAP ETRs. In a follow up study, we found that bigger firms have significantly higher ETRs in the long run. This indicates that firms take advantage of the tax code to delay tax payments, but the benefit is only short term and eventually they will have to pay.

The results of asset mix, state controlled firms and size indicate that GAAP ETR is a better indicator of ETR in the long run. We do not document any influence of big four auditors on ETRs in all categories. This is somewhat surprising. Given the world-wide reputation of the big four auditing firms, we were expecting them to have influence on their clients in many areas, including tax rates.

This paper is the first to document STA ETR for China publicly listed firms. The rate is very low and is inconsistent with the tax code. So for companies planned on investing in China, they should not rely on the nominal sales tax and addition rate showing in the tax code. Negotiating with the local government will be very beneficial. For companies who planned on investing in real estate industry in China, they should be aware of the higher than average ETRs across all categories.

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