

# **A COMPREHENSIVE STUDY OF CASH AND GAAP EFFECTIVE TAX RATES OF CHINA PUBLICLY LISTED COMPANIES**

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## **ABSTRACT**

This paper uses data on Chinese publicly listed companies from the China Stock Market & Accounting Research Database (CSMAR) for the period 2010-2015 to analyze the factors that influence the sales tax and addition and corporate income tax on Chinese companies. We examine the effective tax rate (ETR) on Chinese companies, taking into consideration percentage of foreign investment. We separately study tax expense and cash tax payment. We evaluate overall tax burden. We analyze what causes differences in GAAP tax expense and cash effective tax. We give deferred tax items special attention. We found that Overall Cash ETR exceeds Overall GAAP ETR by a substantial margin, which we consider to be a negative or unexpected result, since companies are not using tax laws to reduce their cash tax payments.

## **INTRODUCTION**

The effective tax rate (ETR) on companies is a subject of considerable interest and discussion in the US and around the world. There has seemed to be some competition among countries to lower their ETRs in order to attract companies, and thus to improve their economies. The US seems to be losing this competition. According to 2014 data from the OECD, the combined federal and state statutory corporate tax rate for the United States is 39.1 percent. The average of the other 33 members of the OECD is 24.8 percent – 14.3 percentage points lower than the U.S. rate [16]. According to The Tax Foundation the United States has the highest marginal effective corporate tax rate (METR) in the OECD at 35.3 percent [1]. There are significant number of articles and research on U.S. corporations relocating their headquarters to foreign countries. According to CNN inversion can yield significant tax savings [19]. One of the most recent deals, for example, shifts medical device giant Medtronic from Minneapolis to Ireland, where it acquired rival Covidien. Ireland's corporate tax rate of 12.5% is significantly lower than the top U.S. rate of 35%. Although China is not a current OECD member, many companies have an interest in exploring investments and partnerships in China. The ways in which Chinese companies are taxed and the effective corporate tax rate on Chinese companies are important factors in analyzing these potential investments. In the next section, we explain the basic types of taxes levied on Chinese companies. The purpose of this paper is to analyze the factors that influence the sales tax and addition and corporate income tax ETR of Chinese companies, taking into consideration percentage of foreign investment. This paper uses data from China publicly listed companies. Since ETR is influenced by deferred tax assets and liabilities, we pay special attention to deferred taxes. Specifically, we investigate how impairment loss, past year losses and asset mix influence ETR. Deferred tax items are newly implemented when China adopted IFRS in 2007. Even though the effect of impairment losses on

deferred taxes cannot be overstated, with 53% publicly listed firms stating that their deferred tax assets are solely created by impairment loss [20], no study of GAAP vs. cash ETR to our knowledge has included this item in their study. We are also unaware of studies that take previous year loss into consideration when investigating GAAP vs. cash ETR differences.

There is considerable literature that examines the relationship of ETR to firm size, industry, firm leverage, asset mix, political connections, ownership structure and deferred taxes in various countries. We differ from most previous studies in that we separately investigate sales tax and addition and income tax. We separately study tax expense and cash tax payment. We evaluate overall tax burden. We focus our attention on what caused the GAAP and cash effective tax differences. We take into consideration firm size, industry, year, firm leverage, asset mix, and ownership structure. We give deferred tax items special attention. Data were collected for all companies listed on the two major Chinese stock exchanges over a six year period from 2010 through 2015. All financial information for this period was prepared based on International Financial Reporting Standards (IFRS), which were adopted in China as of January 1, 2007. We included all industries in our data collection.

### **China Tax System**

China imposes three major taxes: sales tax and addition, value added tax, and income tax. The tax system has gone through major reform, and the new tax system in effect in 2011 eliminated many favorable tax treatments to international companies. Even before that, in 2007, China streamlined the corporate income tax for domestic and international funded companies to level out the playground [9]. Thus, theoretically, our research time period (2010-2015) should show little evidence of favorable tax treatment to companies with international ownership. 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. The sales tax rate varies from 3% to 20% depending on the industry. The basic value added tax rate is 13% for domestic products, 17% for imported products, and 0% for exported products. 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 tax and addition and income tax obligation of publicly listed companies.

## **LITERATURE REVIEW**

There have been a great many studies on the impact of various factors on ETR.

### **Size and Industry**

The relationship of effective tax rate and firm size has been extensively researched. Heshmati, Johansson, and Bjuggren [6] 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. Sebastian [13] wanted to determine whether the ETR that Romanian companies actually experienced agreed with the statutory tax rates cuts that took place. He 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. Olhoft [11] examined which variables affect firms that avoid more income taxation, resulting in lower effective tax rates. The finding

is that higher income is associated with income tax avoidance, larger firm size is not. Multinational firms have a much stronger negative relationship between income and ETRs, suggesting that multinational companies avoid more tax per dollar of income than U.S. domestic-only companies do. Other studies that have considered size or industry or both includes Stickney and McGee [15]; Liu and Cao (2007); Noor, Mastuki, and Bardai [10]; Wu, Wang, Luo and Gillis [18].

### **Ownership Structure**

Wu, Wang, Luo and Gillis [18] examined all non-financial public companies listed in China's A-share market to determine how state ownership, tax status, firm size affect ETR. They found that privately controlled firms have a higher ETR than state-controlled firms. Liu and Cao (2007) also study ownership structure.

### **Capital Intensity/Asset Mix**

Liu and Cao [7] considered firm size, leverage, asset mix, profitability, ownership structure, and overemployment. They found that 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 to promote employment. They also found that the larger the share of ownership by the largest shareholder, the larger the ETR. Stickney and McGee [15] found capital intensity, leverage, and natural resources involvement indicates lower ETR. Hsieh [5] found that ETR is sensitive to return on assets, capital intensity, inventory intensity, and leverage.

### **Auditor and Company Management**

McGuire, Omer and Wang [8] used four proxies for a firms' tax avoidance, 1) book effective tax rate, 2) cash effective tax rate, 3) total book-tax differences, 4) measure of discretionary permanent book-tax differences. McGuire, Omer and Wang found that tax-specific industry expertise of the external audit firm plays a significant role in its clients' tax avoidance, or lowering its ETR. Dyreng, Hanlon, Maydew [3] 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 top and bottom quartiles showed an 11 percent difference in GAAP ETR.

### **Liquidity and Leverage**

Stanfield [14] found greater tax avoidance or lower ETR for firms with insufficient cash. Also, an increase in tax avoidance for firms which meet or just beat the consensus cash flow forecast. Noor, Mastuki, and Bardai [10] found that real estate, trading and services and construction companies had higher ETRs and that lower ETRs were associated with highly leveraged companies and those with greater investments in fixed assets and extensive foreign operations.

### **Deferred Tax Asset and Deferred Tax Liability**

The United States Government Accountability Office (GAO) [17] found at least two-thirds of all active U.S. corporations had no federal income tax liability. Larger corporations were more likely to owe tax. Of those large corporations whose financial statements reported a profit, 19.5 percent paid no federal income tax that year. Reasons why even profitable corporations may have paid no federal tax in a given year include the use of tax deductions for losses carried forward from prior years and tax incentives,

such as depreciation allowances that are more generous in the federal tax code than those allowed for financial accounting purposes.

## **METHODOLOGY**

### **Data Collection**

The data is from China Stock Market & Accounting Research Database (CSMAR). The data range is from 2010-2015.

### **Effective Income Tax Rate (GAAP EITR and Cash EITR)**

We use two standard measures to define effective tax rate, which have been adopted by many other studies [3][4]. First, the effective corporate income tax rate is as defined under GAAP, total income tax expense divided by pre-tax accounting income. Second, the effective corporate income tax rate is defined on a cash basis as cash income taxes paid divided by pre-tax accounting income. The first measure will capture tax expense for financial reporting purposes (hereafter GAAP EITR). The second measure will capture cash basis tax expense (hereafter cash EITR). There is only one tax item reported on the cash flow statement, that is cash paid for taxes. We cannot separate how much is paid for income tax and how much is paid for sales tax and addition. Due to this limitation, we have to make the assumption that sales tax and addition expense roughly equals cash paid for sales tax and addition.

Cash income tax= Total cash paid for taxes-Sales tax and addition expense (1)

### **Effective Sales Tax and Addition Rate (ESTAR)**

There are very scarce studies about sales tax and addition. We venture to define effective sales tax and addition the same way as effective income tax. Sales tax and addition ETR is sales tax and addition expense divided by pre-tax accounting income (hereafter ESTAR). As we afore mentioned, we are unable to identify how much cash is paid for sales tax and addition, we thus make the assumption that cash paid for sales tax and addition equals sales tax and addition expense. ESTAR serves as both cash and GAAP ESTAR.

### **Overall Effective Tax Rate (GAAP ETR and Cash ETR)**

We define a company's overall GAAP ETR as sales tax and addition and income tax expense divided by pre-tax accounting income. We define a company's overall cash ETR as total cash paid for taxes divided by pre-tax accounting income.

### **Overall GAAP vs. Cash ETR Differences -Deferred Taxes**

This item is essentially deferred taxes and tax payable changes. We view it as an imperfect proxy for deferred taxes. Deferred tax asset and liability can influence cash taxes tremendously. What determines deferred tax asset and liabilities is a worthy question itself. We suspect state ownership and asset mix all influence deferred items.

### **Influential Factors**

The relationship of effective tax rate and size (proxied by log of sales) were extensively researched [6][7][21] [12]. Industry and effective tax rate also have been well studied [13] [6] [10]. Firm leverage (proxied by total liability/total asset) could have an effect on effective tax rate since interest is tax deductible [7][10]. Asset mix (proxied by long term assets/total asset, 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 [7][10]. Asset mix can be viewed as one of the various measures of capital intensity.

Ownership structure could affect effective tax rate. Dyreng, Hanlon, and Maydew [3] 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 the percentage of state and international ownership. A company can have both state and international ownership. We investigate the interaction of state and international ownership. We include these different categories because different ownership structures could result in different corporate cultures and thus, different levels of aggressiveness of tax avoidance.

Derashid and Zhang [2] studied the effect of state ownership on effective tax rate in Malaysia with no significant findings. Liu and Cao [7] documented that the higher the biggest shareholder's ownership percentage, the higher the effective tax rates. 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 taxation for domestic and international funded companies. China further eliminated favorable tax treatment at the federal level to companies with international ownership in 2011. However, local governments are still permitted to provide various incentives for international investment. The tax benefits are rather complicated and inconsistent from year to year and from region to region.

Deferred tax items in China have three major components: tax and financial reporting of temporary differences in depreciation; impairment losses; and previous losses which can be carried forward for five years. The effect of these three items on GAAP and Cash ETR cannot be ignored, thus we are taking these factors into consideration. The specific year we are researching could have some effect on the effective tax rates [3]. We thus included year as a variable.

## **CONCLUSIONS**

A few significant items deserve special mention. International ownership is a significant factor in reducing all ETR items. All ETR items increase with size. Bigger firms have higher tax rates. Wholesale & retail industry has the highest tax rates and is a significant tax hiking factor in every category. What also caught our attention is the complex industry because of its remarkably low tax rates. More research is needed to identify what complex industry typically involves. Tax rates did come down after 2011 and stay stable since. We consider Overall Cash ETR in excess of Overall GAAP ETR a negative or unexpected result, since companies are not using tax laws to reduce their cash tax payments. Apparently impairment loss is a major contributing factor to overall Cash ETR being in excess of overall GAAP ETR while international ownership does the opposite. While the overall GAAP ETR of 17.53% seems to be attractively low for investors, the Overall Cash ETR of 33.83% paints a different picture.

## **REFERENCES**

[1] Borean, R. (2/6/2014) U.S. has highest marginal effective corporate tax rate in OECD, Tax

Foundation.

- [2] Derashid, C., & Zhang, H. (2003) Effective tax rates and the “industrial policy” hypothesis: evidence from Malaysia. *Journal of International Accounting, Auditing & Taxation*, 12(1), 45-62.
- [3] Dyreng, S. D., Hanlon, M., & Maydew, E. L. (2010) The effects of executives on corporate tax avoidance. *The Accounting Review*, 85(4), 1163-1189.
- [4] Dyreng, S. D., Hanlon, M., & Maydew, E. L. (2008) Long-run corporate tax avoidance. *The Accounting Review*, 83(1), 61-82.
- [5] Hsieh, Y. (2012) New evidence on determinants of corporate effective tax rates. *African Journal of Business Management*, 6(3), 1177-1180.
- [6] Heshmati, A., Johansson, D., & Bjuggren, C. M. (2010) Effective corporate tax rates and the size distribution of firms. *Journal of Industry, Competition and Trade*, 10, 297-317.
- [7] Liu, X., & Cao, S. (2007) Determinants of corporate effective tax rates. *The Chinese Economy*, 40(6), 49-67.
- [8] McGuire, S. T., Omer, T. C., & Wang, D. (2012) Tax avoidance: Does tax-specific industry expertise make a difference? *The Accounting Review*, 87(3), 975-1003.
- [9] Ministry of Finance of People’s Republic of China. (2009) With east wind, comes Spring. Retrieved from [http://jgdw.mof.gov.cn/caizhenggaigesanshinian/gongzuochengjiu/200811/t20081105\\_87875.html](http://jgdw.mof.gov.cn/caizhenggaigesanshinian/gongzuochengjiu/200811/t20081105_87875.html)
- [10] Noor, R. M., Mastuki, N., & Bardai, B. (2008) Corporate effective tax rates: A study on Malaysian public listed companies. *Malaysian Accounting Review*, 7(1), 1-20.
- [11] Olhoft, S. L. (1999) Tax avoidance activities of U.S. Multinational corporations. Dissertation paper. The University of Michigan.
- [12] Rego, S.O. 2003. Tax-avoidance activities of U.S. multinational corporations. *Contemporary Accounting Research* 20(4), 805-833.
- [13] Sebastian, L. (2010) CNCSIS-UEFISCSU, project no. PN-II-RU-PD, code 340/2010.
- [14] Stanfield, J. W. (2011) Cash liquidity, holdings, and performance as determinants of corporate tax avoidance. Dissertation paper. Purdue University.
- [15] Stickney, C. P., & McGee, V. E. (1982) Effective corporate tax rates, the effect of size, capital intensity, leverage, and other factors. *Journal of Accounting and Public Policy*, 1(3), 23-45.
- [16] Sullivan, M. (3/25/2015) The truth about corporate tax rates. Forbes. Retrieved from <http://www.forbes.com/sites/taxanalysts/2015/03/25/the-truth-about-corporate-tax-rates/#58da77b620a5>
- [17] Unites States Government Accountability Office (GAO) (3/17/2016) corporate income tax, most large profitable U.S corporations paid tax but effective tax rates differed significantly from the statutory rate. Retrieved from <http://www.gao.gov/products/GAO-16-363>
- [18] Wu, L., Wang, Y., Luo, W., & Gillis, P. (2012). State ownership, tax status and size effect of effective tax rate in China. *Accounting & Business Research*, 42(2), 97-114.
- [19] Wallace, G. (7/7/2014) more companies bail on U.S. for lower taxes. CNN Money. Retrieved from <http://money.cnn.com/2014/07/07/news/economy/tax-advantage-inversion/>
- [20] Wang, N. (2007) Unveiling Deferred taxes treatment under the new rule. *Security Market Weekly Journal*. Retrieved from [Finance.sina.com.cn/stock/marketresearch/20070319/23393420576.shtml](http://Finance.sina.com.cn/stock/marketresearch/20070319/23393420576.shtml)
- [21] Zimmerman, J. (1983) Taxes and firm size. *Journal of Accounting and Economics*, 5, 119-149