Determinants of Effective Tax Rates in Nigeria

Justina Ngozika Obiorah,
Accountancy Department, Federal Polytechnic Oko
Phone: 08025663944; Email: Justinaobiorah@gmail.com

and

Alphonsus S. Anichebe Ph.D,
Department of Accountancy,
Chukwuemeka Odumegwu Ojukwu University, Igbariam Campus.

Abstract

This study investigated the determinants of effective tax rates in Nigeria for the period of 2012 to 2014 with 107 observations. We used secondary data from the stock exchange. Our data set has a cross sectional structure using eviews8. We used descriptive statistics tools. The result reveals that leverage proves to be a significant variable in reducing effective tax rates in Nigeria as this was the most significant variable in the study. The result also shows that interaction effect between age and leverage could increase effective tax rates though not significantly. We recommend that future researcher shall observed how long-run effective tax rates proposed by Dyrene, 2008 are influenced by the same indicators using a similar sample and more variable could be included to improve the predictive ability of the model.

Keywords: Effective Tax Rate [ETR]

INTRODUCTION

This paper aims at giving a contribution to the scanty literature on corporate tax in developing countries like Nigeria especially in the very interesting area of the very determinants of effective tax rate (ETRs). The particular focus of this paper is on firm specific determinants of ETRs. Ever more the choice and establishment of the statutory tax rate is on the main agenda of governments. It is well known that taxes are an important source of revenue that help states develop their public policies. However, the willingness to increase statutory taxes in order to satisfy that purpose has been somewhat constrained by other important aspects such as the relevance of corporate taxation to the attractiveness of foreign investment. Therefore, investigations concerning the analysis of which factors may determine the taxes paid by firms in Nigeria are useful for regulators and policy makers and contribute to the definition of domestic tax systems. If taxes are a significant element for macroeconomic policies they are no less important for firms' strategic decisions as it impacts the available cash to meet other firm specific needs including rewarding the shareholders in the form of dividend. This is supported by Graham (2003) who says that effective tax rates can affect corporate decision making and other related aspects such as capital structure, payout policy and risk management. Taxes are ever more viewed as an enhancing component of bottom line firms' performance. Robinson and Weaver (2010) show that evaluate a firm's tax department as a "profit centre" is associated with lower effective tax rates than if it was categorized as a "cost centre". Therefore, any reduction of taxes paid contributes to an increase of earnings disclosed in the financial statements. Considering that the main purpose of firms' activity should be creating value to shareholders, actions to minimize the tax burden are in line with that objective. According to this perspective, this paper examines some of the determinants of effective tax rates. We

follow a similar approach to the one used by Richardson and lanis (2007) and, more recently, by Kraft (2014) to estimate the impact of firms 'characteristics on ETRs.

Studies such as (Gupta and Newberry, 1997; Desai and Dharmapala, 2006; and Dyreng., 2008; Hanlon and Haitzman., 2010; Minick and Noga, 2010; Armstrong and Blouin.2012) have in one way or another paid attention to the determinants of effective tax rates in Different markets. Following previous literature we are interested in the influence of size, profitability, and capital structure and asset mix composition and firm age on effective tax rates. We expect those variables to be related to firms' tax expense which has been define in the IAS 12 (IASB, 2010) as "the aggregate amount included in the determination of profit or loss for the period in respect of current tax and deferred tax". Our computation of effective tax rate in this work would follow the idea of (Richardson and Lanis, 2007).

To the best our knowledge, the literature related to the study of effective tax rates which uses firms listed on the Nigeria Stock Exchange is scarce. The majorities of the studies about effective tax rate either incorporates other factors such as Corporate Governance or are largely based on advanced economies, with little attention given to an emerging market like Nigeria. Secondly, this work would be employing a more recent data and period than other studies. By taking this into consideration, our paper contributes to the scanty literature on firm determinants of ETRs.

LITERATURE REVIEW AND SPECIFICATION OF HYPOTHESES

Graham (2003) presents a set of corporate decisions that are influenced by taxes and concludes that corporate taxation has become increasingly relevant to corporate financial decisions. As taxation represents a cost to a firm it necessarily affects its performance. Therefore, there has been a growing concern to find ways to reduce the firms' tax burdens in a legal and effective ways. Extensive literatures have in one dimension or another tried to provide assumptions and directions for corporate effective tax behavior. Such works include but not limited to: (Dyreng et al., 2008; Minick and Noga, 2010; Armstrong et al., 2012; Vieira, 2013; Kraft, 2014). When we look at corporate taxation, nominal tax rates say very little about firms' tax expense. In fact, a firm's tax expense is obtained by applying a series of deferrals and accruals to the amount resulting from the multiplication of statutory tax rate and the pretax income. This is caused by dissimilarities between accounting and fiscal systems which have different rules about the treatment of some items of financial statements. Such differences can be used by managers to reduce ETRs trough a legal way.

This objective of minimize tax expense has taken different approaches such as Tax Avoidance in Desai and Dharmapala (2006) and Dyreng et al. (2008), Tax planning Armstrong et al. (2012)and Wahab and Holland (2012) or tax management Minick and Noga (2010) and clarify that it consists on "the ability to pay a low amount of taxes". The possibility to manage taxes is to some extent related with the deferred component of tax expense. However, Hanlon and Heitzman (2010) explain that strategies based on the deferred component of tax expense don't have influence on the GAAP ETR. Nonetheless, it is still important to note that due to the time value of money, firms may choose to pay a low amount of taxes at the present moment and defer the payment of the remaining taxes to the future. By applying this strategy, firms are exploring the opportunities, firms can manage deferred taxes in to future times with different and sometimes, more favorable tax circumstance which invariably improves their financial position.

Firm Size and Effective Tax Rate

Effective tax rates are determined by multiple major firms' characteristics. Firms' size is one of such characteristics expected to influence ETRs. This indicator is largely studied in the literature. However, the direction of the relationship between firms' size and ETRs has not be conclusive over time as different authors find direction of such relationship.

The work of Zimmerman (1983) documents that larger firms are associated to higher effective tax rates and that this can be in line with political cost or firm success theory; which believes that effective tax rates are a proxy for political cost for the reason that taxes paid are a sort of wealth transfer mechanism which can also represent extent of firm success. Therefore, if larger firms are more successful than smaller firms those will be exposed to more political scrutiny. As larger firms are subject to higher scrutiny from tax authorities they have reluctance to reduce effective tax rates. Consequently, larger firms are expected to have a higher taxation burden when compared with firms which have a smaller dimension since taxes paid represent political costs which shall be borne by firms.

(Siegfried, 1972) provides a conflicting idea. This theory argues that since larger firms have more power and more resources to manage taxes it is expected that they have lower ETRs. Consistent with this perspective, Dyreng et al. (2008) and Richardson and Lanis, (2007) find a negative relation between size and ETR. However, other studies report that firms' size has a positive impact on effective tax rates. These studies include (Rego, 2003; Vieira, 2013; Kraft, 2014). These studies confirm the political cost theory of Zimmerman (1983).

However, Gupta and Newberry (1997) show that firms' size and ETR are not associated when we look to this relationship over time. In analyzing UK firms, Holland (1998) also finds mixed relations between size and ETR. He concludes that the direction of the relationship depends the firms' industry classification. Hence, previous literature has not reached a consensual opinion about the association between size and effective tax rates. Therefore, our hypothesis becomes:

H0: There is no significant relationship between Firm Size and Effective Tax rate

Leverage and effective Tax Rate

The capital structure of a company is also fundamental to investigate so as to know how it impacts firms 'effective tax rate. How a company chooses its financing resources is important due to different fiscal treatment of different means of funding. A firm may essentially decide between debt financing and equity financing. If a firm decides on equity financing, though this can be a cheaper alternative, it has a huge tax implication since the reward to much investors in forms dividends, are not deductible for tax purposes. This makes it more likely that companies would always prefer to structure their capital mix in such a way that reasonable leverage is taken so as to enjoy the tax shield benefit that are associated with debt interest. As pointed out by Kraft (2014), firms' financing decisions may also contribute to the alignment of shareholders and managers' interests. Managers of firms with higher levels of leverage are subject to the discipline of financing agreements imposed by creditors through the inclusion of limiting clauses which makes them to behave more responsibly and in accordance with rational expectations. These restrictions reduce the leeway available to take decisions that are not value maximizing or in any way detrimental to the shareholders.

Given this explanation, it is expected that more leveraged firm's exhibit lower effective tax rates. This was as according to Richardson and Lanis (2007) and Kraft (2014) who found a significant negative relationship between leverage, used as a proxy for capital structure, and effective tax rates. Due to this advantage associated to the debt tax shield, our prediction is in line with the extant literature and, hence, we expect a negative association between debt financing and ETRs. This expectation is expressed thus:
H0: there is no significant relationship between Leverage and effective Tax Rate

Asset Tangibility and Effective Tax Rate

Along with firms' financing decisions, investment decisions are also a characteristic that can go a long way in influencing effective tax rates. As pointed out by Hanlon and Heitzman (2010), managers' investment decisions can be to some extent constrained by corporate taxes due to the uncertainty of tax payments and deductions that have to be incorporated in the calculation of an investment's present value. As well as the deductibility of interest expense, depreciations and amortizations are an important

slice of firms' costs. Therefore, firms that are more capital intensive take adequate advantage of capital investments benefit more from depreciations deductibility. This is even more important since an asset economic life is usually longer than the depreciation period (Richardson and Lanis, 2007).

The existence of different depreciation methods, more capital-intensive firms can easier manage taxes by accelerating or deferring depreciation expense and, consequently, they can take advantage from temporary book differences which help them make some tax savings.

Regarding these asset mix variables, Gupta and Newberry (1997) document that capital intensity has a negative and significant impact on ETR. The results presented by Richardson and Lanis (2007) are in the same direction of the ones showed by Gupta and Newberry (1997). However, Derashid and Zhang (2003) do not find a significant influence on ETRs but, in contrast, also show a negative association between capital intensity and ETRs at some points. Recently, Rodríguez and Arias (2014) that study the determinants of ETR in the BRIC countries also document a positive association between capital intensity and ETR. In Kraft (2014) asset mix was excluded as explanatory variables of effective tax rates. This author argues that the fiscal benefits associated to capital intensity which result in differences between book and tax accounts will be captured by the deferred component of effective tax rate. Therefore, capital intensity will not affect ETR.

However, a study by Myroshnichenko (2004) on the Ukrainian companies, found that among others, negative correlation exists between tangibility and the type of tax strategy adopted by a company. Also, Frank and Goyal (2009) opines that a firm without physical assets can more easily locate income in a jurisdiction that is tax favored, without the burdens that would accompany a firm with fixed assets. Thus, concluding that asset tangibility most times can become a burden that exerts negative consequences on carrying companies by depriving them of certain benefit they could have enjoyed. Other studies like (2002), Booth (2001)Wald (1999) expect the average level of tangibles to be inversely related to the rate of cash taxes paid.

H0: there is no significant relationship between Asset Tangibility and Effective Tax Rate

Firm Profitability and Effective Tax Rate

An intuitive indicator with capacity to influence effective tax rate is firms' profitability. Specifically, when we measure profitability based on pre-tax income it is expected that more profitable firms have higher earnings and, consequently, pay more taxes. This point of view is the one most evident in the literature. A positive association between firm's profitability and Effective Tax rate was found by Gupta and Newberry (1997),Richardson and Lanis (2007), Minick and Noga (2010) and Armstrong et al. (2012). By contrast, there have been other authors who argue that profitable firms can benefit from tax exemptions and use tax deductions and tax credits in a more efficient manner and, as a result, these firms exhibit greater book-tax differences (Manzon and Plesko, 2002).

According to Rego (2003), more profitable firms have lower costs associated to managing taxes because they have more resources to invest in tax planning activities that contribute to lower effective tax rates. Furthermore, firms with higher pre-tax income have more incentives to reduce their taxation burden as the investors would have a positive expectations on such increased revenue, consequently, to decrease ETRs would be of utmost interest. In accordance with the perspective that more profitable firms exhibit lower Effective Tax Rate, Derashid and Zhang (2003) and Kraft (2014) document a negative influence of firms 'profitability on Effectives. In view of these various perspectives described above, we hypothesis thus:

H0: There is no significant relationship between Firm profitability and effective Tax Rate

Firm *Age and Effective Tax Rate*

Some empirical studies have proven the relationship between a firm's age and effective tax to be positive. This as it is contained in Joshua (2008): Hall, (2004) and Petersen and Rajan (1994). A more recent study by Pfaffermayr (2013) also established that firm age is associated positively with the corporate effective tax arrangement and further concludes that firm age and that tax-induced advantage of debt is more important for older firms than for younger ones. Also, older firms would have learned their rope very well on how to reduce their tax liability since they have been around for some time.

However, a study by Ko and Yoon (2011), for instance, established that younger firms might be more tax saving than older firms since younger firms might be taking more debts which could help them reduce their effective tax than older firms who have already established a profit line. This findings is also supported by Esperanca, Ana and Mohamed (2003) who concluded that there might not be any significant relationship between firm age and their tax ability since any company; whether old or young can be interested in finding ways to save more money through taxes.

There is no significant relationship between firm age and tax saving strategy.

Variables Definition and Sample Selection

Variables Definition

Tax Variables

We are interested in studying the determinants of effective tax rates in Nigeria. Consequently, effective tax rate is our dependent variable. As expressed in IAS 12.5 (IASB, 2010) "tax expense (tax income)is the aggregate amount included in the determination of profit or loss for the period in respect of current tax and deferred tax". The latter component accounts for all differences in the calculation of financial and taxable profit which may result from temporary differences and/or the use of tax losses or tax credits. Many authors have considered different measures of effective tax rate in their studies. Regarding the numerator of the ratio used to compute the effective tax rate, Gupta and Newberry (1997) and Rego (2003) are some of the authors that use only current tax expense in the numerator. However, we believe that the inclusion of deferred tax expense in the numerator will produce more accurate results as deferred expense also reflects the influence of firms' specific characteristics on their tax burden. Therefore, our study is in line with Richardson and Lanis (2007), Chen et al. (2010), Minick and Noga (2010), Armstrong et al. (2012) and Kraft (2014), for instance. Similar to the numerator, the choice of the ratio's denominator is not objective. As pointed out by previous researchers (Gupta and Newberry, 1997 and Richardson and Lanis, 2007) we can select taxable income, financial income or cash flow from operations as denominator. Nevertheless, we measure our first effective tax rate as tax expenses provision against pretax profit while the second one looks at the actual amount of tax that was paid in form of cash. This is as Follows:

$EFTR1 = TAXEPENSES$ / PBT

$EFTR2 = TAXCASH$ / PBT

In order to control for any potential bias in our study and following Gupta and Newberry (1997) and Kraft (2014), we applied some restrictions to our ETRs values. We restricted our ETRs to lie between 0% and 100%.

Independent Variables

Firms' Specific Variables

To examine the determinants of effective tax rates in Nigeria, we concentrate our analysis hypotheses related to firms' size, leverage, asset structure and profitability.

SIZE = the log of Total Assets of the Sampled Companies.

This variable is largely used in papers related to the study of effective tax rates (Gupta and Newberry, 1997; Richardson and Lanis, 2007; Minick and Noga, 2010; Vieira, 2013).

LEVERAGE= the ratio of Total Debt to Total Assets. This in as used by Chen et al. (2010), Huang et al. (2010) and Armstrong et al. (2012) are some of the authors that include a proxy for leverage in their researches.
ASSET TANGIBILITY= this is taken as the ratio of tangible assets to Total Asset. Works such as (Gupta and Newberry, 1997; Derashid, and Zhang, 2003; Richardson and Lanis, 2007; Minick and Noga, 2010; Rodríguez and Arias, 2014) have employed this variables in their various studies.
PROFITABILITY=Return on Asset [ROA] which would be measured as PBT/TOTAL ASSET such as used in Armstrong et al. (2012), Vieira (2013) and Kraft (2014).

Tax Variables, measurements and apriority expectations
Explained Variables
ETR 1 Tax expense / Pre-tax income
ETR 2 Tax Cash paid / pretax income
Explanatory Variables
SIZE Log (total assets) +/-
LEV Total debt / Total Asset -
ASSET TANGIBILITYFixed Asset/ Total assets -
ROA Pre-tax income / Total assets +/-
AGE= year of NSE listing

Sample Selection Methodology and Model Specification
Our investigation is based on 107 observations of listed companies within 2012 and 2014
In order to test the hypotheses developed in section 2, in this section we explain the methodology used. Our data set has a cross sectional structure; therefore we apply a cross sectional model with the aim of achieving best estimation results. To correct for Heteroskedasticity we perform the White test. Having corrected for heteroskedasticity, we would estimate and report the Weighted Least Square Result of our models.

The models of the study are:
MODEL1: $EFFT1 = \partial_0 + \partial_{1i} SIZE + \partial_{2i} LEVERAGE + \partial_{3i} ASSETTANG + \partial_{4i} ROA + \partial_{5i} AGE$
MODEL2: $EFFT1 = \partial_0 + \partial_{1i} SIZE + \partial_{2i} LEVERAGE + \partial_{3i} ASSETTANG + \partial_{4i} ROA + \partial_{5i} AGE$

Results
In this section, the various results of the estimated models would be presented and analyzed

Table 1: Descriptive Statistics
The table 1 below presents sum exploratory features such as the mean, median, max and min and the JB probability of the variables under study.

	efft1	EFFT2	SIZE	FA_TA	AGE	TL_TA	ROA
Mean	0.23	0.4	7.45	29.76	1992	59.17	4.93
Median	0.19	0.21	7.22	19.8	1991	56.2	3.4
Maximum	6.29	18.84	9.64	98	2014	104.6	54
Minimum	-1.9	-0.39	5.65	0.5	1969	5.1	-26.1
Std. Dev.	0.68	1.83	0.94	27.7	13.47	22.68	10.29
Jarque-Bera	15676.26	42039.55	8.51	12.56	8.25	3.5	415.49
Probability	0	0	0.01	0	0.01	0.17	0
Observations	107	107	107	107	107	107	107

Source: author's computation using eviews8

From the table above, we can observe that the mean effective tax expenses was 23% while that of effective tax cash payment was lesser with about 19%. This shows that effective tax cash payment is very much lesser than the actual provision made within the period of study. On the average, our sampled companies carried high tangible assets in their balance sheets, high leverage with high profitability.

The age variable shows that majority of the companies were listed in 2014. We can also see that the variables are normally distributed as shown by the JB Statistic with the exception of Leverage variable which shows that there is huge disparity in the borrowing levels of the sampled companies.

Table 2: Person Correlation Matrices

The Pearson correlation metrics shows the extent to which the variables move together with each other over time within the study period

	Efft1	Efft2	SIZE	FA_TA	AGE	TL_TA	ROA
EFFT1	1						
EFFT2	0.915						
SIZE	-0.15	-0.11	1				
FA_TA	0.00	-0.04	-0.31	1			
AGE	0.02	0.01	0.15	-0.15	1		
TL_TA	-0.32	-0.22	0.52	-0.38	-0.14	1	
ROA	0.00	-0.02	0.00	-0.03	-0.05	-0.17	1

Source: author (2016)

Efft1 and efft2 are seen to be highly correlated. This is due to the similarity of the variables of measurement. Size is seen to be following some expected assumption which says that as a company grows in size, it would begin to discover legal ways of reducing its effective tax rates. Asset tangibility seems to be positively associated with EFFT1 but inversely related to EFFT2. The age variable shows that older companies might be associated with both higher tax expenses and actual cash payment. Leverage shows that obviously debt is a good way to reduce tax payable since tax can be shielded through the interest's payable on such debts. We can also may budget tax expenses that is actually higher than what they eventually pay in the form of cash. This would result to deferred tax asset creation.

Table 1: Regression Results

The table below presents the regression result which would allow us to make recommendations and conclusion as it would show the extent significance of the variables under study. The variables have been corrected for heteroskedasticity and the weighted least square result is what is been reported.

VARIABLES	***SIGN***	***COEFFICIENTS EFFT1 MODEL[WLS]***	***COEFFICIENTS EFFT2 MODEL[WLS]***
C	+	8.81(0.26)	3.34(0.20)
SIZE	+/-	0.01(0.60)	-0.01(0.74)
FA_TA	-	-0.00(0.29)	-0.00(0.37)
*AGE[AGE*TL_TA]*	+	-0.00((0.29)	-0.00(0.26)
TL_TA	+	-0.01(0.08)*	-
ROA	+	0.13(0.28)	-0.01(0.34)
R-Squared		0.13	0.07

Adj-R-Squared *F-Statistic* *Observation*		0.09 3.21(0.00)** 107	0.04 2.17(0.07)* 107

Source: Author (2016)
Note :() contains P_values. ** 1% level of significance. * More than 5% but less than 10% level of significance

The R_Squared of 13% and 7% respectively for the different models show that the variables didn't explain much of Effective tax rate. A large portion of it are left unexplained, hence, more researches should be done with more variable inclusions. The F. Statistics is 3.21(0.00) and 2.17(0.007) and with their significant probability values, we can conclude that the models are well specified.

The results show that size **[size=0.01(0.60),-0.001(0.74)]**is not significant in determining effective tax rate in our study. It shows that while firm growth might result to large tax budget but the cash tax paid is reduced as shown by EFFT2 model but this would not be in a significant manner. This result follows the thinking of Dyreng et al. (2008) and Richardson and Lanis, (2007) who find a negative relation between size and ETR.

Asset Tangibility **[FA_TA=-0.00(0.29),-0.00(0.37)]** this variable in inversely related to the two effective tax measures but not significantly. What this result is suggesting is that increase in asset tangibility reduces effective tax rate but not in a significant manner.

Age **[age/age*TL_TA= [-0.00(1.20), 0.00(0.26)].** Firm age variable shows that older companies can reduce their effective tax with time but when age is interacted with leverage in model 2 for significance purpose, we observed that older leveraged companies are having more effective tax rate. This is a puzzle as it could be expected that leveraged companies should have less effective tax rate. This could be in line with Esperanca, Ana and Mohamed (2003) who concluded that there might not be any significant relationship between firm age and their tax ability since any company; whether old or young can be interested in finding ways to save more money through taxes. And Ko and Yoon (2011), who established that younger firms might be more tax saving than older firms since younger firms might be taking more debts which could help them reduce their effective tax than older firms who have already established a profit line.

Leverage **[TL_TA=-0.01(0.08)]**haven interacted leverage and age in the 2 model, the 1 model shows that corporate debt is positively and significantly related to effective tax rate. This means that corporate debt could be a good way to shield tax because the interest expenses are tax deductible thereby making debt attractive for tax purposes. However, this is contrary to the findings of Richardson and Lanis (2007) and Kraft (2014).

Profitability **[ROA=-0.00(0.28),-0.00(0.34)]** this variable shows that profitable companies have means of reducing their tax liability though not significantly. This could be to make sure that there is enough profit left to share to the shareholders. This follows the thinking of Rego (2003), who believes that more profitable firms have lower costs associated to managing taxes because they have more resources to invest in tax planning activities that contribute to lower effective tax rates. Furthermore, firms with higher pre-tax income have more incentives to reduce their taxation burden as the investors would have a positive expectations on such increased revenue, consequently, to decrease ETRs would be of utmost interest

Conclusions

The activities of tax reduction may contribute to important cash savings which will benefit shareholders and all remaining stakeholders. As a consequence, the analysis of investment decisions should take into consideration effective tax rate instead of the statutory tax rate. By this reason, this study provides some added value to existing literature by investigating how effective tax rates are affected by firms' financial and operational characteristics. In order to examine what affects ETRs we use a sample of 107 firms listed on the Nigerian stock exchange during the period 2012-2014. Our data is organized in a cross sectional structure. To measure effective ETRs we use two different variables. Our first ETR measure is obtained as the ratio between tax expense and pre-tax income. The second measure differs from the first because in the numerator we use actual cash paid out as tax.

Following a similar approach to Richardson and Lanis (2007) and Kraft (2014), we start our study by examining the impact of financial and operational indicators on ETRs.

Our results show that larger firms could have higher ETRs confirming the political cost theory (Zimmerman, 1983). Firms with a more capital intensive asset structure evidence lower effective though not significantly. Along with firms' dimension, firms' profitability has a negative influence on ETRs. We also found that older and highly leveraged companies could be having more effective tax rates which might be contract to expectations. However, leverage shows to be effective in reducing effective tax rate of sampled companies.

Our investigation has some limitations. Firstly, we are analyzing a short sample period. Secondly, due to the sample period we use, we focus our research on current effective tax rate. It would be interesting if future research observed how long-run ETRs proposed by Dyreng et al. (2008) are influenced by the same indicators using a similar sample. Also, more variables could be included to improve the predictive ability of the model.

References

Adams, R. B., Hermanlin, B. E., & Weisbach, M. S. (2010). The Role of Boards of Directors in Corporate Governance: A Conceptual Framework and Survey. *Journal of Economic Literature*, 48 (1): 58-107.

Armstrong, C.S., Blouin, J. L., & Larcker, D. F. (2012). The incentives for tax planning, *Journal of Accounting and Economics*, 53: 391–411.

Badertscher, B. A., Katz, S. P., & Rego, S., O. (2013). The separation of ownership and control and corporate tax avoidance, *Journal of Accounting and Economics*, 56: 228- 250.

Baltagi, Badi H., (2003), *Econometric Analysis of Panel Data*, Fifth edition, Wiley.

Bureau van Dijk (2015), "BvD Independence Indicator",https://webhelp.bvdep.com/Robo/BIN/Robo.dll?project=64_EN&newsess=1&refer=https%3A//amadeus.bvdinfo.com/version2015319/Search.QuickSearch.serv%3F_CID%3D1%26context%3DKMPTB6DMGD881FQ, (Accessed, February 2015).

Chen, S., Chen, X., Cheng, Q., & Shevlin, T. (2010) Are family firms more tax aggressive than non-family firms?, *Journal of Financial Economics*, 95: 41–61.

Derashid, C., & Zhang, H. (2003) Effective tax rates and the "industrial policy" hypothesis: Evidence from Malaysia, *Journal of International Accounting, Auditing and Taxation*, 12: 45-62.

Desai, M. & Dharmapala, D. (2009) Corporate tax avoidance and firm value, *The Review of Economics and Statistics*, 91 (3): 537-546.

Desai, M.,& Dharmapala, D. (2006) Corporate tax avoidance and high-powered incentives, *Journal of Financial Economics*, 79: 145–179.

Dyreng, S., Hanlon, M. & Maydew, E. (2008) Long-run corporate tax avoidance, *The Accounting Review*, 83 (1): 61-82.45

Eisenberg, T., Sundgren, S., & Wells, M. T. (1998) Larger board size and decreasing firm value in small firms, *Journal of Accounting and Economics*, 48: 35-54.

Fama, E. F., & French, K. R. (1997) Industry costs of equity, *Journal of Financial Economics*, 43: 153-193.

Fama, E.F., & Jensen, M. C. (1983) Separation of ownership and control, *Journal of Law and Economics*, 26: 301–325.

Florackis, C. (2008) Agency costs and corporate governance mechanisms: evidence for UK firms, *International Journal of Managerial Finance*, 4 (1): 37–59.

Fraile, I. A.,& Fradejas, N. A. (2014) Ownership structure and board composition in a high ownership concentration context, *European Management Journal*, 32: 646-657.

Graham, J. R. (2003) Taxes and Corporate Finance: A review, *Review of Financial Studies*, 16: 1075–1129.

Gupta, S.,& Newberry, K. (1997), Determinants of the Variability of Corporate Effective Tax Rates: Evidence from Longitudinal Data, *Journal of Accounting and Public Policy*, 16: 1–34.

Hanlon, M.,& Heitzman, S. (2010), A review of tax research, *Journal of Accounting and Economics*, 50: 127–178.

Holland, K. (1998) Accounting policy choice: The relationship between corporate tax burden and company size, *Journal of Business Finance and Accounting*, 25: 265–288.

Huang, H., Wang, W. & Zhou, J. (2010)The Effect of Shareholder Rights and Insider Ownership on Earnings Management, *Abacus*, Forthcoming. International Reporting Standards Board (1996) *IAS 12: Income Taxes* [Online].Available at: http://www.iasplus.com/en/standards/ias/ias12 (Accessed February 2015).

Jensen, M. C., & Meckling, W. H. (1976) Theory of the firm: managerial behaviour, agency costs and ownership structure, *Journal of Financial Economics*, 3 (4): 305–360. 46

Kraft, A. (2014) What really affects German firms' effective tax rate?, *International Journal of Financial Research*, 5(3).

Lanis, R., & Richardson, G. (2011) The effect of board of directors composition on corporate tax aggressiveness, *Journal of Accounting and Public Policy*, 30: 50-70.

Manzon, G., & Plesko, G. (2002), The Relation between Financial and Tax Reporting Measures of Income, *Tax Law Review*, forthcoming.

Minnick, K. & Noga, T. (2010) Do corporate governance characteristics influence tax management?, *Journal of Corporate Finance*, 16 (5): 703-718.

Ozkan, A.,& Ozkan, N. (2004) Corporate cash holdings: an empirical investigation of UK companies, *Journal of Banking & Financing*, 28 (9): 2103-2134.

Pearce, J. A.& Zahara, S.A. (1991) The relative power of CEOs and boards of directors: associations with corporate performance, *Strategic Management Journal*, 12:135-53.

Appendix 1: Correlation Metrics

	TAXC_P	TAXY_P	SIZE	FA_TA	AGE	TL_TA	ROA
EFFT1	1	0.915420718	-0.15471081	-0.007361054	0.029079187	-0.326003697	-0.003305011
EFFT2	0.915420718	1	-0.116328259	-0.040940755	0.012091526	-0.227921613	-0.023421604
SIZE	-0.15471081	-0.116328259	1	-0.310209461	0.155118231	0.520443206	-0.006697024
FA_TA	-0.007361054	-0.040940755	-0.310209461	1	-0.151016562	-0.385144896	-0.036504887
AGE	0.029079187	0.012091526	0.155118231	-0.151016562	1	-0.146439818	-0.055714874
TL_TA	-0.326003697	-0.227921613	0.520443206	-0.385144896	-0.146439818	1	-0.174665748
ROA	-0.003305011	-0.023421604	-0.006697024	-0.036504887	-0.055714874	-0.174665748	1

Appendix 2: Descriptive Statistics

	efft1	EFFT2	SIZE	FA_TA	AGE	TL_TA	ROA
Mean	0.23486	0.400467	7.456355	29.76075	1992.271	59.17103	4.937383
Median	0.19	0.21	7.22	19.8	1991	56.2	3.4
Maximum	6.29	18.84	9.64	98	2014	104.6	54
Minimum	-1.9	-0.39	5.65	0.5	1969	5.1	-26.1
Std. Dev.	0.680949	1.830317	0.946718	27.70166	13.47294	22.68989	10.29286
Skewness	6.468122	9.714697	0.638316	0.731465	-0.04167	-0.093682	1.954633
Kurtosis	60.86902	98.14164	2.469991	2.176354	1.641592	2.133415	11.82677
Jarque-Bera	15676.26	42039.55	8.518534	12.56606	8.2578	3.50458	415.491
Probability	0	0	0.014133	0.001868	0.016101	0.173376	0

Sum	25.13	42.85	797.83	3184.4	213173	6331.3	528.3
Sum Sq. Dev.	49.15127	355.1063	95.00508	81342.52	19241.14	54572.12	11229.95
Observations	107	107	107	107	107	107	107

Appendix 3: regression results [EFFT1]

	WLS result			
Dependent Variable: EFFT1				
Method: Least Squares				
Date: 01/22/16 Time: 00:20				
Sample: 1 107				
Included observations: 107				
White heteroskedasticity-consistent standard errors & covariance				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.185322	7.252568	1.12861	0.2617
SIZE	0.018834	0.036197	0.520317	0.604
FA_TA	-0.004448	0.004203	-1.058341	0.2924
AGE	-0.003592	0.003425	-1.048779	0.2968
TL_TA	-0.013067	0.007493	-1.743921	0.0842
ROA	-0.005937	0.005579	-1.064284	0.2897
R-squared	0.137453	Mean dependent var		0.23486
Adjusted R-squared	0.094753	S.D. dependent var		0.680949
S.E. of regression	0.647885	Akaike info criterion		2.024234
Sum squared resid	42.39526	Schwarz criterion		2.174113
Log likelihood	-102.2965	Hannan-Quinn criter.		2.084993
F-statistic	3.219025	Durbin-		2.240504

		Watson stat		
Prob(F-statistic)	0.009731	Wald F-statistic		1.864368
Prob(Wald F-statistic)	0.1072			
	POOLED RESULT			
Dependent Variable: EFFT1				
Method: Least Squares				
Date: 01/22/16 Time: 00:08				
Sample: 1 107				
Included observations: 107				

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.185322	10.02609	0.816402	0.4162
SIZE	0.018834	0.08179	0.230273	0.8183
FA_TA	-0.004448	0.002557	-1.739227	0.085
AGE	-0.003592	0.005058	-0.710072	0.4793
TL_TA	-0.013067	0.003677	-3.553586	0.0006
ROA	-0.005937	0.006335	-0.937188	0.3509
R-squared	0.137453	Mean dependent var		0.23486
Adjusted R-squared	0.094753	S.D. dependent var		0.680949
S.E. of regression	0.647885	Akaike info criterion		2.024234
Sum squared resid	42.39526	Schwarz criterion		2.174113
Log likelihood	-102.2965	Hannan-Quinn criter.		2.084993
F-statistic	3.219025	Durbin-Watson stat		2.240504
Prob(F-statistic)	0.009731			

Appendix 4: regression results [EFFT2]

	WLS			
Dependent Variable: EFFT2				
Method: Least Squares				
Date: 01/22/16 Time: 01:00				
Sample: 1 107				
Included observations: 107				
White heteroskedasticity-consistent standard errors & covariance				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.382237	1.874961	1.270553	0.2068
SIZE	-0.0194	0.058368	-0.33244	0.7402

FA_TA	-0.01086	0.012093	-0.8981	0.3712
AGE*TL_TA	-1.22E-05	1.09E-05	-1.12168	0.2646
ROA	-0.01464	0.015566	-0.94077	0.349
R-squared	0.078677	Mean dependent var		0.400467
Adjusted R-squared	0.042547	S.D. dependent var		1.830317
S.E. of regression	1.790956	Akaike info criterion		4.048978
Sum squared resid	327.1675	Schwarz criterion		4.173877
Log likelihood	-211.62	Hannan-Quinn criter.		4.099611
F-statistic	2.177598	Durbin-Watson stat		2.140684
Prob(F-statistic)	0.076747	Wald F-statistic		1.009552
Prob(Wald F-statistic)	0.406164			

Dependent Variable: EFFT2				
Method: Least Squares				
Date: 01/22/16 Time: 00:27				
Sample: 1 107				
Included observations: 107				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.382237	1.532162	1.55482	0.1231
SIZE	-0.019404	0.218498	-0.088805	0.9294
FA_TA	-0.01086	0.006917	-1.570037	0.1195
AGE*TL_TA	-1.22E-05	4.84E-06	-2.530144	0.0129