

The Influence of Corporate Diversification on Tax Policy: Moderating the Role of Firm Size in the Emerging Economy

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Corporate tax policies are an important area of discussion for tax collection authorities around the globe. Companies use these strategies to avoid their tax and raise after-tax income without violating tax laws. In developing countries, revenue from the tax sector is a big percentage compared to another source of revenue. Therefore, there is a need to extend the literature on tax aggressiveness in developing economies like Pakistan. The objective of this study is to investigate the impact of corporate diversification on tax aggressiveness with the moderating role of firm size of the 200 listed firms on the Pakistan Stock Exchange. The frequency of data is annual started from 2006 to 2018. We use the entropy-index to measure the corporate diversification. The result shows that there is significant negative impact of corporate diversification on tax aggressiveness, and firm size moderates the relationship between these two variables. In addition, we use firm characteristics such as leverage, firm profitability, capital expenditure and market to book ratio as control variables. Finally, this study is helpful for regulatory bodies, investors, and government and policy makers to promote corporate diversification strategies in the emerging economies.

Key words: *Tax Policy, Corporate Diversification, Firm Size, Emerging Economy*

1. Introduction

Corporate tax aggressiveness is an important area of discussion for tax collection authorities around the globe ((Kubick, & Lockhart, 2016; Dyreng, Hanlon, & Maydew, 2019; Guenther, Wilson, & Wu, 2019; Drake, Lusch, & Stekelberg, 2019). Companies use these strategies to avoid their tax and raise after-tax income without violating tax laws (Wilson, 2009; Lisowsky, 2010). On the other hand, the Government has imposed higher tax penalties to increase its tax revenue (Mashaiekh & Seyyedi, 2015). In developing countries, revenue from the tax sector is a big percentage compared to any another source of revenue. Therefore, several studies have been conducted to examine the factors affecting the tax strategies such as firm size, leverage, capital intensity, research and development, intangible assets and profitability (Annuar et al., 2014; Guenther, Matsunaga, & Williams, 2017; Beer, Mooij, & Liu, 2018). Furthermore, the association among corporate diversification and tax avoidance strategies also seeks attention around the globe (Zheng, 2017) in developed economies. There is a need to extend the literature on tax aggressiveness in developing economies like Pakistan. Furthermore, shareholders and investors are interested in unearthing the relationship between a company's tax policies and diversification strategies in Pakistan. Besides this, diversified business is likely to be less involved in tax aggressiveness as compared to stand alone firms or large firms. Therefore, there is a need to examine the role of firm size in the relationship between corporate policies and tax aggressiveness strategies in developing economies such as Pakistan.

Furthermore, Christensen, Dhaliwal, Boivie and Graffin, (2015) analysed the personal political orientation of the CEOs who are sinewy toward the Antimonarchist Party connected with low tax aggressive as opposed to the Democratic Party. According to Koester, Sheylin and Wangerin, (2016) the executives have efficient and superior ability to manage corporate resources and are involved in greater tax aggressiveness. In the perspective of government ownership Salihu, Obid and Annuar, (2014) argued government - linked companies (GLCs) have a positive influence with tax aggressive practices. Additionally, past research documented that various aspects of CEOs and board of directors have significant influence on commercial tax aggressiveness (Evertsson, 2016; Dyreng, Hanlon, & Maydew, 2010; Desai & Dharmapala, 2006; Brown & Drake, 2013). Due to the tax legislation system, researchers study the tax aggressive issues and show interest in it because this is becoming informational in society's development nowadays (Verboon & Dijke, 2007). It depends on the tax structure, economy, social attitude and types of income. The main purpose of tax aggressiveness is to minimise the overall corporate tax burden such as regressive taxes, federal income tax, FICA and other payroll taxes, GST, capital gain tax, etc (Huseynov & Klamm (2012).

Previous literature study the link of tax aggressiveness with the proprietorship structure - family, foreign & government - (Landry, Deslandes, & Fortin, 2013; Annuar et al., 2014), board members (Richardson, Taylor, & Lanis, 2013), outside directors, and debt policy (Richardson, Lanis, & Leung, 2014). The corporate social responsibility, debt maturity structure (Kubick, & Lockhart, 2017) proprietorship of overseas, administration,

& family ownership are main and important elements of tax aggressiveness (Armstrong, Blouin, Jagolinzer, & Larcker, 2015; Lin, Cheng, & Zhang, 2017). Additionally, Gaaya, Lakhali, and Lakhali, (2017) examined that the tax aggressiveness has a positive relationship with family ownership. Prior research describes female existence on board reduce the barrier of the aggressiveness of tax (Hoseini, Gerayli, & Valiyan, 2019). Researchers found families appropriate marginal interests pull out leases from tax aggressive positions. Researchers found that the dependent suppliers and principal customers did not pay attention towards taxes (Cen, Maydew, Zhang, & Zuo, 2017). Richardson, Lanis, and Taylor, (2015) explored that financial distress and global financial crisis are positively connected with the aggressiveness of corporate tax practices.

The relationship between corporate tax aggressive and multinational companies, by considering firm size, is analysed by Taufiq and Tertiaro, (2018). Furthermore, Rusydi (2014) investigate the association between tax aggressiveness and multinational companies having a large firm size. Researchers also show a positive relationship between firm size and tax aggressive activities (Richardson et al., 2015). Bachas and Jensen, (2017) studied the relationship among firm size and tax policies and found positive effects of firm size on enforcement and tax compliance. In the past, researchers documented that firm size is a significant factor to drive firms to be more diversified from one segment to other segments in their business (Chatterjee & Wernerfelt, 1991). Untoro and Rahardian, (2015) find that corporate diversifications are strategies mostly determined by possession of resources and that statement also aligns with Nath, Nachiappan and Ramanathan, (2010). Researchers find that firms having high resource advantages are more likely to diversify their business; large assets (tangible and intangible) could enable firms to build their economies of scope, expansion of their business segmentation and geographic segment (Untoro & Rahardian, 2015). Wentland, (2016) investigate that on average the firms that operate in multiple industries have lower tax liabilities (lower tax aggressiveness) than stand-alone firms or single industry firms.

There are many studies conducted to examine the relationship of tax practices with multiple variables such as research and development, intangible assets, capital intensity, profitability, financial reporting (Heltzer, Mindak, & Shelton, 2012) leverage and firm size (Annuar, Salihu, & Obid, 2014; Mulyadi & Anwar, 2014; Duan, Ding, Hou, & Zhang, 2018; Lin, Cheng, & Zhang, 2017; Zheng & Suyan, 2017). Kenny, (2002) examines that the tax policies seem to affect network morals, social capitals and the degree of trust of individuals. In addition to the mentioned factors ethics and social capital play a significant role in tax aggressiveness; the ethical societies subsidising the organisations empower a significant level of trust and social capital. Furthermore, with empirical results much research has been conducted like the effect of industrial diversification on firm taxes (Wentland, 2016), corporate diversification and tax avoidance (Zheng, 2017) and corporate diversification discounts shed light on management choice (Smith & Coy, 2018), while no attention has been focusing on the moderating effect of firm size in the relationship between corporate diversification and tax aggressiveness. This



study investigates firm size as a moderator with the relationship between corporate diversification and tax aggressiveness.

Additionally, in financial research the literature of corporate diversification also exists with different factors such as corporate diversification and firm productivity (Jiang, Yang, Chen, & Liang, 2019) stock liquidity and corporate diversification (Gu, Wang, Yao, & Zhang, 2018) and debt maturity (Olibe, Rezaee, Flagg, & Ott, 2019). There exists empirical evidence of different studies that analyse tax avoidance and capital structure in the presence of zakat and corporate tax avoidance (Azura & Sanusi, 2014), debt maturity and tax aggressiveness (Kubick, & Lockhart, 2017) transfer pricing, earning management and tax avoidance (Amidu, Coffie, & Acquah, 2019) and corporate governance and tax aggressiveness (Kovermann & Velte, 2019). There are few studies on corporate diversification and corporate tax avoidances in the developed market (Zheng, 2017 & Su, Li, & Ma, 2019). Therefore, there is a need to analyse the corporate diversification and tax aggressiveness in the emerging equity market.

The objective of this study is to analyse the moderating role of firm size in the relationship between corporate diversification and tax aggressiveness (Zheng, 2017). For this purpose, the researcher selected 200 non-financial companies from the emerging equity market of Pakistan from 22 different sectors. The empirical finding reveals that corporate diversification has a significant negative impact on corporate tax aggressiveness while firm size moderates the relationship between the studied variables. In addition, different firm characteristics such as leverage, firm profitability, capital expenditure and market to book ratio also contribute to tax aggressiveness.

This study contributes to literature in the following ways. *Firstly*, the novel contribution of this study is to introduce the firm size as a moderator between corporate diversification and tax aggressiveness practices. Therefore, it is the first time that it introduces firm size as a moderator in the relationship between corporate diversification and tax aggressiveness. The second contribution is that it extends the debate on the association between company diversification and tax aggressiveness to emerging countries.

This study has the following sections: section 1 provides the introduction and theoretical background, section 2 describes the related literature review, hypothesis development and framework of the study, section 3 discusses the data description and measurement of variables, section 4 reveals research methodology and econometric modelling, section 5 is about the empirical finding and discussion, section 6 describes the conclusion of the study, which is followed by the future recommendations and limitations of the study.

2. Theoretical Background

This study explores the relationship between corporate diversification and tax aggressiveness with the interaction term of firm size. According to Zheng, (2017) this research is based on the agency theory that is explained below.

2.1. Agency Theory

Around the world, there are many social and economic activities (e.g religion, educational, research, and entertainment). The different types of firms and organisations e.g. partnerships, corporations, mutual funds, profit and non-profit organisations and organisations that provide goods and services. There is a competition among organisations and firms for the survival of these activities. With above-mentioned important factors, to survive our operational activities, the organisations and firms face agency problems. Additionally, researchers find agency problem contracts were not causelessly composed and authorised (Fama & Jensen, 1983).

Researchers found that because managers are not full outstanding claimants, they make decisions that increase their utility in this way, with the value of the firm potentially decreasing; in this result, they can create agency problems. A substantial literature proposes that corporate diversification is a leading example of the agency relationship among shareholders (Principal) and other executives (Agents) (Meckling & Jensen, 1976). El Mehdi and Seboui, (2011) documented large firms have more complex organisational structure and agency problems. Companies are diversified across more than one countries' segments and industries. It is common that diversified firms are larger than one-segment firms and have less translucent operations that create difficulties for investors and analysts similar with Chang,C, (2004). Researchers (Kim & Pantzalis, 2003; Chang & Yu, 2004) documented that the diversified firms have a greater composite organisational structure than the stand-alone firms with less apparent operations; this problem creates complications for shareholders and analysts (Liu & Qi, 2008; Rodrı & Van, 2010). Researchers remain prospective towards revelation with agency conflicts and informational irregularity teething troubles.

Desai and Dharmapala, (2006) investigate weak governance in the relationship between principal and agent which is proceeding towards being less aggressive, and firm managers about well performing therefore they should overcome the tax aggressiveness. Weak corporate governance arrangement includes that the firms, which are diversified, might involve into less corporate tax avoidance than stand-alone firms Zheng, (2017) might. Bhatia and Thakur, (2018) investigate corporate diversification as a financial management perspective. Diversification also generates agency problems such as over capitalisation, when managers sometime diversify just to cover their individual risk and get better remuneration at the expense of their stakeholders; this might impact on the level of firm performance. Weak corporate governance breaks down the relationship among principal and agents, and it leads company

managers to be less aggressive increasing firm performance through corporate tax aggressiveness.

3. Related Literature and Hypothesis Development

This segment describes the related review of literature and hypothesis development of the study.

3.1. Corporate Diversification and Tax Aggressiveness

There is limited literature on tax aggressiveness with corporate diversification in terms of firm size. Duchin, (2010) claimed the multidivisional firm's hold less cash because they are diversified in their investment opportunity. Zhao, (2010) studied chain business groups and found that government-owned business groups incline to be more diversified. Furthermore, researchers found diversification could not destroy the firm value when considering it ignores inner growth (Campa, & Kedia, 2002). According to the researchers, it also examines the positive relation among great disclosure eminence in addition to the additional cost of divergence (Bens & Monahan, 2004). Researchers investigate diversification discount with the outfitting philosophy of divergence and find that concession seems on the way to be the result of organisation glassy mispricing (Smith & Coy, 2018). While researchers investigate and provide opposing theories, mixed results impact corporate diversification and tax aggressiveness. Researchers examined corporate diversification which has a negative influence on tax aggressiveness (Denis & Sarin, 1997; Husnain, Anwar, Hameed & Khan, 2021). In line with Zheng, (2017) corporate diversifications are strategies that companies use to explain their business. Akben and Selçuk, (2015) studies emerging economies and documented that diversified companies have more valuable industries that prefer diversification premium as compared to stand-alone companies. Many researchers like Olibe, Rezaee, Flagg and Ott, (2019) studies the United State's industries and examined that those companies that diversified have a high equity value rather than stand-alone companies. Finally, corporate diversification adds new ideas in present literature, while, according to past studies this research develops a hypothesis.

H₁: There exists significant negative impact of corporate diversification on tax aggressiveness.

3.2. Firm Size as a moderator in between corporate diversification and tax aggressiveness

Corporate diversification and business strategies, used by the managers to diversify their business. Kannadhasan, (2009) investigate business strategies, performance and well-thought-out firm size as a moderator among these items' relationship. Kannadhasan, (2009) documented that organisation formulates suitable strategy without adequate resources. Therefore, firm size is a contingency variable with the best way to measuring the relationship among strategy and firm performance (Hofer, 1975). It is surprising that there is not much

literature on investigating the relationship among tax aggressiveness and different variables i.e. capital intensity, transfer pricing, financial distress (Marwa & Wahyudi, 2018) and firm size as a moderator of that relationship.

Researchers investigated that firm size and growth play a role in tax management and corporate diversification. Maksimovic and Phillips, (2002) examined how diversified firms allot assets through divisions and how they change their asset assignment compared to stand-alone firms in light of industry stuns. Research conducted by Patrick, (2012) showed a positive result of firm size and corporate diversification. The researchers found that an expansion in firm size would upgrade the company's diversification. Researchers investigate that as prospective of growth rate, that firms that have higher growth should have higher tax rates (Dyreng, Hanlon, & Maydew, 2008).

The size of the firm also uses as an explanatory variable in financial research literature (Desai & Dharmapala, 2009; Hoopes, Mescall, & Pittman, 2012; Hoseini et al., 2019). The researchers found that firm size has a positive relationship among corporate tax aggressiveness (Dyreng et al., 2008 & Hoopes et al., 2012; Whait, Christ, Ortas, & Burritt, 2018). The measurement of firm size uses multivariate analysis of the ordinary logarithm of total assets as an alternative to measure the size of firm (Dyreng et al., 2008; Desai & Dharmapala, 2009; Hoopes et al., 2012; Hoseini et al., 2019). Lin et al., (2014) and Richardson et al., (2013) investigated big firms involved in further tax aggressiveness practice contrasted with small firms because of their further social and monetary influence. Researchers inspected that firm size positively influence the ETR measure where it adversely influences the tax book difference (Gaaya et al., 2017). In view of the overarching literature, this study likewise creates the following hypothesis to discover the association of business diversification and tax aggressiveness practice with the moderating role of firm size.

H₂: Firms size significantly moderates the relationship between corporate diversification and corporate tax aggressiveness

3.3. Control Variables

The effect among leverage and corporate tax aggressiveness has been studied by various studies (Chen et al., 2010; Badertscher, Katz, & Rego, 2013; Laguir, Staglianò, & Elbaz, 2015; Mohanadas, Abdullah, & Pheng, 2019). Organisations use debt financing for operational activities rather than equity financing that result in lower ETRs; given that interest, expense reduces the taxable income. Lin, Cheng and Zhang, (2017) documented that firms have a high debt ratio (higher-leverage) and have more tax-deductible interest expenses. Those firms that have high leverage are linked with tax aggressiveness due to deduction of tax, interest payments and the tax shield of debt (Laguir et al., 2015; Duan et al., 2018). Several times in research literature leverage is used as a control variable and this variable measured do different proxies e.g. total debt divided by total equity. Falope and Ajilore, (2009) define firm

profitability as companies generating profits through its assets and operations. Rego and Wilson, (2012) documented tax aggressiveness is a way of high profitability in the many attributes of an organisation. Rationalisation is a process of reorganisation and boosts up the sales of the firms or industry; through it, the firm efficiently produces their product. Furthermore, organisations that have extraordinary growth opportunities are gradually expected to add tax aggressiveness to increase their advantages and decrease their liabilities (Kubick & Lockhart, 2016; Gaaya et al., 2017).

Researchers also suggested several ways to measure the investment spending (investment outflow/trade or assets expenditure / total assets) and also use it as a control variable (Dyreng et al., 2008; Dyreng, 2010; Koh & Lee, 2015; Bayar, Huseynov, & Sardarli, 2018; Borah, Park, & Shao, 2018; Thomsen & Watrin, 2018; Jiang et al., 2019). Husevnov and Klamm, (2012) claimed to found out the ownership income tax structure affected by dividend policies. In past research, the researchers use capital expenditure as a control variable (Desai & Dharmapala, 2008). Husevnov and Klamm, (2012) investigate when companies have high capital expenditure its results are higher GAAP ETR. In addition, capital expenditure measures as a ratio of capital expenditure (Zheng, 2017). Market to book ratio is a control variable that is also used in past researches (Masripah, Diyant, & Fitriyani, 2017; Chircop, J., Fabrizi, M., Ipino, E., & Parbonetti, A. 2018; Olibe et al., 2019). The proxy of the market to book ratio is a ratio of market value of equity divided by the book value of the equity. Olibe et al., (2019) documented that MBR is a way to measure the firm growth opportunity. In addition, Deng, Elyasiani, and Mao, (2007) claim that MBR uses as a proxy an agency problem. So those firms have a high growth opportunity; the result is high agency problems (Myers, 1977), while researchers investigate the MBR value controls the growth opportunity.

3.4. Conceptual Framework of the Study

In this research corporate diversification is taken as an independent variable (IV), whereas corporate tax aggressiveness is taken as a dependent variable (DV). Further, firm size is a moderator variable; beside that leverage, firm performance capital expenditure and market to book ratio are taken as control variables. Appendix A shows the conceptual framework of this study.

4. Data Description and Measurement of Variables

This section explains data description, measurement of variables, research methodology, model specification and econometric modeling. Study has been done by using time series secondary data.

4.1. Data Description

This study uses secondary data for analysing the empirical results. Data is collected from 200 companies listed on Pakistan Stock Exchange. The 22 non-financial sectors have been included and we excluded the financial sector because it has different structure of profit generation. Those companies which were delisted, merged, acquired, liquidated or replaced in the end of financial year 2018 are excluded from the data. Of the 200 listed companies, 13 percent are from textile spinning, 11 percent from textile composite, and 10 percent from the cement industry. Further, details of selected sectors are an automobile assembler 8%, automobile parts & accessories 3%, cable & electric goods 3%, chemical 5%, engineering 4%, food & personal care products 5%, glass and ceramics 4%, miscellaneous 2%, oil & gas exploration 3%, oil & gas marketing companies 2%, paper & board 4%, pharmaceuticals 3%, power generation & distribution 3%, refinery 2%, sugar & allied industries 5%, technology & communication 4%, textile weaving 2%, tobacco 2%, and transport 2%. The frequency of data is an annual basis from 2006 to 2018. Data has been collected from the companies websites, annual reports of the companies and the State Bank balance sheet analysis. All sources that are used for data collection is reliable for Pakistani companies.

4.2. Measurement of Variables

This section discusses the measurement of all the variables.

4.2.1. Measurement of Tax Aggressiveness

In this research, tax aggressiveness measure through GAAP ETR. According to McClure, Lanis, Wells, and Govendir, (2018) tax aggressiveness is calculated with the ratio of tax expense divided by the pre-tax book income. This measurement is also used by Dyreng et al., (2008) and Whait et al., (2018).

$$GAAPETR = \frac{\text{Tax Expense}}{\text{Pre tax income}}$$

4.2.2. Measurement of Corporate Diversification

Furthermore, Hoskisson, Hitt, Johnson, and Moesel, (1993) found to have a strong reliability of entropy index and apply to measure the change in diversification. It is derived from information theory as a measure of redundancy in the data. In this study, we apply quantitative analysis, so this method is used to measure the corporate diversification.

$$DIV(\text{entropy index}) = \sum_{i=1}^C -P_i * \log_2(P_i)$$

where P_i refers to the proportion of sales in the industries' segment and DIV refers to corporate diversification. C is the number of industries' segments and \ln is a natural log. The entropy measure, in this manner, considers the quantity of segments where an organisation works, and the overall significance of each segment for firm sale. A greater value of entropy index displays the high level of diversification. The entropy for stand-alone firm is reflected as "0".

4.2.3. Measurement of Firm Size

In this research, firm size is measured through the natural logarithm of total assets (Huang, Lobo, Wang, & Xie, 2016 & Lin et al., 2017; Sarwar, Xiao, Husnain, & Naheed, 2018). Previous researchers demonstrate this measurement for firm size.

$$Firm\ Size = \ln (Total\ Assets)$$

4.2.4. Measurement of Leverage

Leverage measure is long-term debt divided by the total assets. This proxy is verified from previous researchers (Mohanadas, Abdullah, & Pheng, 2019; Borghesi et al., 2019).

$$Leverage = \frac{Long\ Term\ Debt}{Total\ Assets}$$

4.2.5. Measurement of Firm Profitability

Firm profitability measures the profit before interest and tax divided by the sale (Zheng, 2017). This proxy is more reliable for Pakistani companies.

$$Firm\ Profitability = \frac{Earning\ before\ Interest\ \&\ Tax}{SALE}$$

4.2.6. Measurement of Capital Expenditure

Capital expenditure is a fund that companies used to maintain physical assets such as technology, equipment, property, plant and machinery. In this study researcher, gets the total cost of these items to calculate the capital expenditure. Capital expenditure measures the ratio of capital expenditure divided by the sale (Desai & Dharmapala, 2009; Zheng, 2017).

$$Ratio\ of\ Capital\ Expenditure = \frac{Capital\ Expenditure}{SALE}$$

4.2.7. Measurement of Market to Book Ratio (MBR)

The market to book ratio is measure through market value of equity divided by the book value of equity lastly take natural log of final results (Zheng, 2017). Masripah et al., 2017 and Sarwar et al., 2018 use this proxy in our researchers.

$$\text{Market to Book Ratio (MBR)} = \ln\left(\frac{\text{Market value of Equity}}{\text{Book Value of Equity}}\right)$$

5. Research Methodology and Econometric Modeling

In this study table 4.1 shows all the variables' proxies and their abbreviations that are used in this research. Model specification is shown in the general equation no 1 and 2. Here, \ln shows the natural logarithm while, ε shows standard error in the OLS regression analysis. Besides that, t shows the time series data analysis. In general equation Y is the dependent variable (tax aggressiveness) X is the independent variable (corporate diversification) Alpha α is the intercept and β is the slope of the OLS regression equation. Further details of econometric modeling are as below.

Table. 4.1
Abbreviation & Proxies

Variables	Abbreviation	Measurement/Proxies
Tax Aggressiveness	GAAP ETR	Tax expense / pre-tax income (Dyreng et al., 2008; McClure et al., 2018; Whait et al., 2018)
Corporate Diversification	DIV	Measure through Entropy Index (Jacquemin & Berry, 1979; Hoskisson et al., 1993)
Leverage	LEV	The long-term debt divided by the total asset (Abdullah, & Pheng, 2019; Borghesi et al., 2019)
Firm profitability	FP	The profit before tax divided by the average total assets (Zheng, 2017)
Firm Size	FS	The natural log of total asset (Sarwar, Xiao, Husnain, & Naheed, 2018)
Total Assets	TA	Sum of All Assets
Capital Expenditure	CE	Capital Expenditure Ratio CE/Sale (Zheng, 2017; Desai & Dharmapala, 2009)
Market to book ratio	MBR	Market value of Equity/Book value of Equity (Sarwar et al., 2018)

5.1. Model Specification

In this study, the researcher uses the following equations to econometrically explain the association of corporate diversification and tax aggressiveness methods in Pakistan.

General Equation:

$$Y_t = \alpha + \beta X_t + \varepsilon_t$$

This study estimates the following equation to find the relationship of corporate diversification and tax aggressiveness.

$$GAAPETR_t = \alpha + \beta_1 DIV_t + \beta_2 LEV_t + \beta_3 \frac{EBIT_t}{SALE_t} + \beta_4 \ln TA_t + \beta_5 \frac{CE_t}{SALE_t} + \beta_6 \ln MBR_t + \varepsilon_t \dots \dots \dots (1)$$

This study estimates the following equation to analyse the moderating role of firm size. In this study, firm size is taken as moderator. The researcher multiplies corporate diversification (*DIV*) and firm size (*lnTA* proxy of firm size) which is the multiplier and moderator of studies.

$$GAAPETR_t = \alpha + \beta_1 DIV_t + \beta_2 DIV_t * \ln TA_t + \beta_3 LEV_t + \beta_4 \frac{EBIT_t}{SALE_t} + \beta_5 \ln TA_t + \beta_6 \frac{CE_t}{SALE_t} + \beta_7 \ln MBR_t + \varepsilon_t \dots \dots \dots (2)$$

6. Empirical Finding

This section shows the results of descriptive statistics, correlations and the regression analysis along with diagnostics checks.

6.1. Descriptive Statistics

This segment shows the results of table 5.1. The time period of the analysis is 2006 to 2018 on annual bases. This table includes maximum and minimum value, and mean and standard deviation. All results are alien to previous studies. The average value of tax aggressiveness is 1.224; this means mostly companies are tax payers. The standard deviation value is 1.2203. The higher tax value is 5.303 and the lower is 0.0035. The corporate diversification mean value is 0.3562 with 0.2011 standard deviation which clearly show most companies have diversified and operate in many foreign countries. The average value of leverage is 0.1683 with 0.1899 standard deviation. This table show high leverage is 1.753 and beside that low leverage is 0.00036. Firm profitability shows the mean value 0.3562 (0.2011), capital expenditure show 0.329 (0.201) and finally market to book ratio show the average value is 1.362 with a standard deviation of 1.6078.

Table. 5.1
Descriptive Statistics

Sr. No.	Mean	Standard Deviation	Maximum	Minimum
Capital Expenditure	0.32906	0.95334	9.36185	0.00017
Corporate Diversification	0.35629	0.20110	0.73559	0.01306
Firm Profitability	0.01621	0.12902	1.67532	-0.31251
Firm Size	3.70354	0.67929	5.72710	1.45334
Tax Aggressiveness	1.22463	1.22030	5.30351	0.00353
Leverage	0.16832	0.18998	1.75306	0.00036
Market to Book Ratio	1.36219	1.60787	9.88902	0.00013

6.2. Correlation Analysis

Table 5.2 demonstrates the results of correlation analysis. Results show corporate diversification and tax aggressiveness have a positive relationship. It means most diversified companies have paid more tax than stand-alone companies. The table shows corporate diversification has a negative relationship between capital expenditure and leverage. It means that those firms which have high capital expenditure with high leverage are not diversified. The tax aggressiveness has a negative relationship with capital expenditure. Subsequently other all dependent, control and explanatory variables have a positive relationship with one another. The firm profitability has a strong positive relationship between capital expenditure 0.63 according to many researchers this is also acceptable. While other variables do not have a strong relationship; therefore this data is clear form multicollinearity. This occur when two variables have a high relationship .7, .8 or .9. The value of correlation analysis is +1 to -1. Correlation is a technique to explain the relationship with strength and direction of two variables. While it is not a perfect measure because it does not explain cases and effect between one or more variables. To examine cases and effect, the researcher applies another measure to solve this problem.

Table. 5.2
Correlation Analysis

Sr. No	Variables	1	2	3	4	5	6	7
1	Capital Expenditure	1						
2	Corporate Diversification	0.0664	1					
3	Firm Profitability	0.6386	0.0786	1				
4	Firm Size	0.0346	0.1592	0.1691	1			
5	Tax Aggressiveness	0.0314	0.2687	0.1205	0.2415	1		
6	Leverage	0.3633	0.0164	0.5025	0.1747	0.0094	1	
7	Market to Book Ratio	0.1797	0.1401	0.3020	0.1147	0.1875	0.1893	1

6.3. Regression Analysis: Corporate Diversification and Tax Aggressiveness

Table 5.3 demonstrate the finding of linear OLS regression analysis with independent and control variables. The results clearly show all variables have a significant relationship. The p value of all variables is less than 0.05 ($p < 0.05$). The adjusted R-squared value is 0.147841 that shows 14.7841% variation of tax aggressiveness is caused by independent and all control variables.

Table. 5.3
Regression Analysis (DV, IV & Control)

Regressor	Coefficient	Standard Error	T-Ratio	Prob
C	-0.5147	0.1609	-3.1986	0.0014
Capital Expenditure	-0.1633	0.0392	-4.1592	0.0000
Corporate Diversification	1.3051	0.1407	9.2757	0.0000
Firm Profitability	1.3099	0.3279	3.9949	0.0001
Firm Size	0.3331	0.0427	7.7929	0.0000
Leverage	-0.5046	0.1737	-2.9052	0.0037
Market to Book Ratio	0.0916	0.0179	5.1096	0.0000
R-squared	0.1508	Mean dependent var		1.1768
Adjusted R-squared	0.1478	S.D. dependent var		1.2393
S.E. of regression	1.1440	Akaike info criterion		3.1111
Sum squared resid	2185.695	Schwarz criterion		3.1338
Log likelihood	-2601.701	Hannan-Quinn criter.		3.1195
F-statistic	49.4615	Durbin-Watson stat		1.8938
Prob(F-statistic)	0.0000			

6.4. The moderating role of firm size in between corporate diversification and tax aggressiveness

Table 5.4 reports the results of linear regression analysis with an interaction term or multiplier firm size. All coefficient of variables is positive and negative with significant relationship. All variables p value are less than 0.05 ($p < 0.05$). R-square denotes value 0.1537 and adjusted R-squared is 0.150225 shows that about 15.0225% of variation in tax aggressiveness is affected by explanatory variables communally. On the other hand, tax aggressiveness 15.0225% explained by other independent and control variables mutually. The result show -0.322134 coefficient and p value are 0.0172. The null hypothesis rejected at 5% level. With results, this study has 95% confidence the firm size moderates the relationship among corporate diversification and tax aggressiveness practice.

Table 5.4
Regression Analysis (DV, IV, Control & Moderator)

Regressor	Coefficient	Standard Error	T-Ratio	Prob
C	-0.8706	0.2193	-3.9696	0.0001
Capital Expenditure	-0.1681	0.0392	-4.2819	0.0000
Corporate Diversification	2.4585	0.5037	4.8804	0.0000
Corporate Diversification*Firm Size	-0.3221	0.1351	-2.3842	0.0172
Firm Profitability	1.0784	0.3415	3.1576	0.0016
Firm Size	0.4384	0.0614	7.1374	0.0000
Leverage	-0.5638	0.1752	-3.2178	0.0013
Market to Book Ratio	0.0903	0.0179	5.0405	0.0000
R-squared	0.1537	Mean dependent var		1.1768
Adjusted R-squared	0.1502	S.D. dependent var		1.2393
S.E. of regression	1.1424	Akaike info criterion		3.1089
Sum squared resid	2178.275	Schwarz criterion		3.1348
Log likelihood	-2598.85	Hannan-Quinn criter.		3.1185
F-statistic	43.3266	Durbin-Watson stat		1.8990
Prob (F-statistic)	0.0000			

6.5. Diagnose Checking Test

The meaning of hetroskedasticity is the standard error of variables, variance of error term is non-constant volatility. Hetroskedasticity occurs when periods of high and low volatility can be identified. This assumption shows the data is valid for regression analysis. This result shows the assumptions of regression analysis are fulfilled.

Table. 5.5
Diagnose Test

Breusch-Godfrey Serial Correlation LM	F-statistic	2.00467	Prob.	0.135
Heteroskedasticity Test: White	F-statistic	1.1273	Prob.	0.165

6.6. Discussion

This research identifies association between corporate diversification and tax aggressiveness strategies with firm characteristics i.e. leverage, firm profitability, capital expenditure and market to book ratio. Furthermore, this study investigates the relationship of corporate diversification and tax aggressiveness with moderating role of firm size. The hypothesis H1 argues that corporate diversification has significant negative relationship with corporate tax aggressiveness. The P value of DIV coefficient is less than 0.05 with coefficient of 2.4585. Its mean diversified firm have less tax aggressive rather than stand-alone firm. These results also much in line with past studies Zheng, S. (2017). The hypothesis H2 is a firm size moderator among corporate diversification and tax aggressiveness. The regression analysis results show p value of interaction term is 0.0172. The larger firms decrease the political cost (Zimmerman, 1983) and that cost is the main factor of corporate tax. Its mean large firm size upgrades the corporate diversification Patrick, (2012) and influence corporate tax aggressiveness. These results are also consistent with previous research e.g. (Maksimovic & Phillips, 2002; Dyreng et al., 2008; Desai & Dharmapala, 2009; Hoopes et al., 2012; Hoseini et al., 2019).

7. Conclusion of the Study

This study examines the impact of corporate diversification on tax aggressiveness with the moderating role of firm size between these two variables. For sample selection study uses 22 different sectors, selects 200 companies listed on PSX as availability of data. The time horizon of data is annual and started from 2006 to 2018. The result shows that corporate diversification has significant negative relationship with tax aggressiveness. Besides that, firm size moderates the relationship between corporate diversification and tax aggressiveness. This study first time introduces firm size as a moderator in the relationship between corporate diversification and tax aggressiveness. Second, it extends the debate on the association between company diversification and tax aggressiveness of developed countries to emerging countries.

Moreover, results shows that high leverage of companies also leads less tax collection because it increases firms cost and reduce profit. We suggest that the policy makers and tax authorities, while setting tax policies, should carefully consider the firm size, capital expenditure, firm profitability and market to book ratio which influence the tax aggressiveness. Additionally, researcher suggest regulatory bodies and tax authorities to promote those strategies to



encourage the managers and stakeholders so these corporate diversification strategies generate positive signals for potential stakeholders and investors by improving tax disclosure and taxation system. Furthermore, for future practitioners another moderator can be used such as corporate governance, CSR, corporate ownership structure with panel data analysis. It can be extended in other emerging economies such as India, China, Iran, and Malaysia.

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Appendix A: Conceptual Framework of Study

Figure. 1: Conceptual Framework of Study

