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## Article

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## ACCOUNTING, CORPORATE GOVERNANCE & BUSINESS ETHICS | RESEARCH ARTICLE

# Corporate income tax, asset turnover and Tobin's Q as firm performance in Pakistan: Moderating role of liquidity ratio

Nisar Ahmad<sup>1\*</sup>, Faisal Nadeem Shah<sup>2</sup>, Faisal Ijaz<sup>3</sup> and Muhammad Naeem Ghouri<sup>4</sup>

**Abstract:** This article finds the impact of corporate income tax and asset turnover on financial performance of the corporate sector with panel data in Pakistan. Panel data of sixteen non-financial firms listed in Pakistan Stock Exchange during the time period from 2006 to 2021 are used for analysis. Panel data are collected from the Data Services & Innovations Department, State Bank of Pakistan (SBP). The fixed effect model (FEM) estimates are found more appropriate for estimation on the basis of Hausman test. The study utilizes Tobin q as an indicator of firm financial performance. Findings of study explain that corporate income tax effects firm financial performance positively. However, this impact is not significant. Further, the impact of asset turnover is negative and significant. Negative relation is found between liquidity ratio and firm financial performance. It indicates that a lesser amount of liquid assets evade from expensive borrowing. Tax structure is important for firm financial growth and performance. The improvements in corporate tax structure to boost the investment in the corporate sector of Pakistan are recommended. Further, sales of Pakistani firms do not meet the neck and neck of firm's assets. Firm is advised to improve product quality for its sale promotion and government can play its role in this regard by devising export policy.

**Subjects:** Economics; Finance; Business, Management and Accounting;

**Keywords:** Corporate income tax; Asset turnover; Tobin' q; Fixed effect model and Pakistan

### 1. Introduction

Firm performance is an essential subject in the organization studies as the prime objective of the corporate sector is its profitability. It is important for firms to perform better to achieve their probability. It is self-contained and conceivable for all organizations if they are efficient in their operations. Corporate structure is complex in its nature and its performance depends upon many factors. Two competing theories explain the success stories of the corporate sector to achieve the objective of profitability. Performance and profit of the firm may depend upon external determinants and firm-specific characteristics. Market-based theory explains that market determinants and external factors are essential for firm to enhance its financial performance (Cano et al., 2004; Grinstein, 2008) whereas resource-based theory considers firm-specific elements to find the firm performance (Day, 2011). However, both types of factors contribute to accelerate growth and performance of firm.

Financial Statement Analysis (FSA) of companies listed at Pakistan Stock Exchange is provided and explained by the State Bank of Pakistan. According to FSA, (2021), the instant performance of non-financial firms in Pakistan in current year 2021 recorded a strong performance as compared to 2020. Fundamentally during 2019 and 2020, the economic activity was slowdown due to Covid-19 and is restoring in 2021. The overall balance sheet analysis of non-financial firms shows a growth of 13.36% in 2021 as compared to growth of 5.73% in 2020. However, the growth trend of non-financial firms during 2018 and 2019 was same and comparable to 2021. It is observed that equity of shareholders achieved 16.16% growth rate during 2021 positively and recorded a higher growth rate compared to previous three years. This is a sign of robust recovery keeping in view the other performance indicators like gross profit, net profit margin, return on equity and assets, earning per share of firm. Indeed, gross sales of non-financial sector of Pakistan reached to a growth of 18.19%. Furthermore, net profit margin increased to 7.64 during 2021 as compared to a decline in during past two years of 2019 and 2020. Return on assets and equity improved to 6.37 and 17.93, respectively, during 2021 after deterioration during 2019 and 2020. In addition, the earnings per share increased to 6.87 during 2021 after observing a fall during last two years of 2019 and 2020 ([Financial Statements Analysis of Companies \(Non-Financial\) Listed At Pakistan Stock Exchange, 2016–2021](#)).

Existing literature on the firm performance show mixed evidence to explain the relationship of corporate income tax to firm performance in the developed economies. Empirical studies devoted to estimate determinants of corporate performance show no unique conclusion. However, limited studies are devoted to estimate the impact of corporate income tax on the firm financial performance in the case of emerging economies. Further, studies are needed to explore the complex structure of corporate sector especially in Pakistan. The present study is devoted to find the factors of firm financial performance in Pakistan. Impact of corporate income tax and assets turnover on Tobin's  $q$  in case of non-financial firms in Pakistan is estimated. It is the contribution of study that it includes external and internal factors as the independent variables to estimate the firm performance. Therefore, theoretical back grounds of this study are based on resource-based theory and market-based theory. Therefore, this study bridges gap through estimating the impact of corporate income tax on corporate financial performance in Pakistan.

## 2. Literature review and hypothesis of study

### 2.1. Firm financial performance

Firm performance is a tool to measure growth and profit of firm. Literature on corporate performance provides many indicators and ratios to estimate the firm financial performance. However, selection of suitable indicator depends on the characteristics and suppose of study. Firm financial performance can be measured through return on equity and assets as used in massive related literature (Yazdanfar, 2013). Waddock and Graves (1997) suggest measuring firm financial performance with return on assets, return on equity and return on sale. Mara and Nicoleta (2019) evaluate firm financial performance using return on equity. However, other measures are also used for firm performance as Makhija (2003) uses share value of the firm and Lee (2009) favors to use ratio of net income and advertising expenses to asset for firm financial performance. Ahmad et al. (2021) use earning per share and market price firm to check the ESG performance of UK firms. Ramadan and Hassan (2022) use Tobin's  $q$ , asset utilization ratio and return on assets to find firm performance. However, our study utilizes the Tobin'  $q$  to measure the firm financial performance.

### 2.2. Framework of Tobin's Q theory

Tobin  $q$  is a ratio of capital to installed replacement cost of the specific firm (Tobin, 1969). Tobin  $q$  is used to explain the performance of the firm (Abel, 1982 and Auerbach, 1983). Justification is provided when we use Tobin's  $q$  for firm performance. The root of Tobin's  $q$  goes to Tobin (1969) when he explained that  $q$  is a portion of market value of the unit capital to replacement cost of firm. Nozick (1994) explains that when capital stock of a firm is increased, it enhances market

value and credibility of the firm. The firm with more lucrative opportunities in the investment has more prospects of earning high profits. The people will show more interest to buy the share of firm due to high share prices of the firm and share price act as an incentive to invest more. Likewise, Yermack (1996) explains that when Tobin  $q$  is improved, it reflects the firm performance.

Abel (1982) develops the analytical framework derived from Hall and Jorgenson (1969) to find the impact of taxes on Tobin  $q$ . The corporate income tax has a varied impact on economy (Abel, 1982 and Auerbach, 1983). The tax theory explains that if government declares to revise income tax downward in the subsequent year, the capital holder can earn supplementary profit. Accordingly, the value of capital stock will be increased today due to expected high profit and  $q$  value is expected to improve due to reduction in income tax rate.  $Q$  theory reveals that decisions of investors are based on current fiscal policies of government and future economic plans.  $Q$  stipulates all forthcoming assessments related to the investment decision of the corporate sector.

Auerbach (1983) critically estimates the impacts of taxes on  $q$  theory of investment and concludes that the impact of temporary tax is comparatively less on corporate performance as compared to the permanent taxes. It is necessary for firm to expand the capital stock in case of high value of  $q$  and vice versa. Corporate enterprise finds the equilibrium point for investment where additional adjustment cost and purchasing amount of the stock are equalized to the market value of the equity. Auerbach (1986) finds the impact of corporate tax on investment and discovers that the permanent credit has a smaller effect on firm behavior as compared to temporary taxes. Hayashi (1982) explains that price of asset depends on the marginal  $q$  and finds that marginal  $q$  enhanced over time because  $q$  changes by the upward trend. Baker and Gompers (2003) examine that an improved Tobin's  $q$  appeals to stakeholder for current and future investment.

Auerbach (1983) measures the effects of corporate adjustment costs and changes in fiscal policies on  $q$  theory of investment. This theoretical model explains the methodology that capital cost has a major impact in the resource allocation of a decentralized market system. Again, Auerbach (1986) develops the inter-relationship among market value of the corporate investment and multiple commercial policies. Expected changes in taxes and specific significance of the effective tax rates are mentioned in their theoretical model. To explain the economic and tax variations in case of United States, these reforms are incorporated in the analytical framework.

King and Fullerton (1984) develop a dynamic reaction of debt financed investment through the changes in taxes. Their theoretical framework explores the investment behavior from corporate income tax. Multiple approaches are used to capture the impact of taxation on corporate investment. For example, market value of firm explains that tax policies have excessive effect on the investment activities. Federici et al. (2015) explore the relationship between corporate income tax and investment in case of Italian firms and find that corporate taxes have impact on the investment decisions of the firm.

### **2.3. Determinants of firm financial performance**

Gbohoun and Castro (2016) incorporate the dynamic stochastic general equilibrium model with a particular focus on fiscal frictions to evaluate the effects of change in corporate tax strategy on corporation level and economic variables. The analysis explains that exclusion of dividend taxes discourages company's investment and capital accumulation is declined after increase in corporate profit tax. Dobbins and Jacob (2016) study the impact of corporate tax rate on increasing investment of German corporation. Difference-in-differences approach is used in the model. Firm-level panel data are used over 2004–2011 from Bureau van Dijk's DAFNE database. The data base contains information of data structure and ownership structure. Domestic and foreign companies are differentiated according to basic place of company of the overall shareholder. The results explain that corporate tax cut can increase corporate investment of domestic firms as compared to foreign owned firms.

Zwick and Mahon (2017) estimate short-term tax impacts on investment reduction using the data of twelve thousands firms. It is found that firms respond strongly to depreciation incentive. Further, remuneration of investment bonds is improved by 10.40 per cent and 16.90 percent during the periods from 2001 to 2004 and from 2008 to 2010, respectively. It is further concluded that the response of small firms to tax policy is 95 per cent more as compared to large companies. Summers et al. (1981) measure the behavior of taxes imposed on firm by means of corporate income tax. Sitanggang (2013) explained that asset turnover of a firm is a ratio and it measures how assets are operated to support the sales of firm. He explained that asset turnover has a positive impact on the firm financial performance. However, literature explains that multiple factors are responsible for firm performance.

Asset turnover is another determinant of firm performance. This ratio is used to study the ability of company to generate revenue. In general, financial position of company is improved with high asset turnover ratio. Therefore, high ratio of asset turnover clarifies that firm is generating marginal income from per unit dollar assets. The ratio comparison of two different corporate sectors is not recommended to compare their performance; however, performance of two firms within the same sector can be compared based on the asset turnover ratio. For example, performance of telecommunications and energy corporations cannot be judged and compared as based on their asset turnover. Kausar et al. (2014) find the positive link of assets turnover to Tobin's q. Assets turnover shows the management efficiency; more the companies have assets to sales ratio, more will be the Tobin's q of the companies.

#### **2.4. Recent literature review**

Al-Dhaafri and Alosani (2022) explain the role of strategic planning, leadership and organizational culture of firm on firm excellence. Further, they investigate that strategic planning has a mediating role in the relationship between leadership and organizational performance. Habib et al. (2022) explore the firm characteristics and firm ownership structure which are responsible for firm performance in Pakistan in case of listed non-financial firms from 2012 to 2017. Results show that market capitalization and concentration ration has positive and significant impact on firm performance. However, insider and institutional ownerships have negative impact on firm performance.

Chancharat & Kumpamool, (2022)) find that working capital has positive impact on the firm financial performance and conclude that working capital of the firm increases the Tobin's q. Arora and Gill (2022) measure the impact of taxes on firm performance of Indian firms and disclose that corporate income tax has an positive and significant impact on firm value. Ahmad et al. (2021) revisit the impact of ESG on firm performance of FTSE 350 firms in UK utilizing data from 2002 to 2018. Results explain that ESG and effective tax rate have a significant impact on the market price and earning per share of firm.

#### **2.5. Hypothesis of study**

Following hypotheses are established and tested in this study.

H1: Corporate income tax has negative impact on firm performance.

H2: Asset turnover has positive impact on firm performance.

H3: Liquidity ratio can moderate relationship between asset turnover and firm performance.

### 3. Data and methodology

#### 3.1. Data and sources

Panel data are collected from the Data Services & Innovations Department, State Bank of Pakistan (SBP). According to SBP, non-financial corporate sector in Pakistan is a significant sector of the economy and it practices a comprehensive, constant and strong industrial base. SBP provides the record of [Financial Statements Analysis \(FSA\) of Companies \(Non-Financial\) Listed At Pakistan Stock Exchange. Data is collected from FSA \(2007-2012, 2011-2016 & 2016-2021\)](#). The list of non-financial companies with their economic group registered at Pakistan stock exchange during 2020 and 2021 is provided in Table A1 appendix. However, finally sixteen non-financials listed firms in Pakistan Stock Exchange (PSX) are included in the analysis for time period 2006–2021. The names of selected firm for analysis are provided in Table A2 in appendix.

#### 3.2. Variables measurement

The variables included in study are measured and explained in this section. Tobin q for each firm is calculated from the data and it is dependent variable in our study; corporate income tax and asset turnover are the independent variables, whereas capital volume and liquidity ratio are kept as the controlled variables. The brief description of variables is provided below.

##### 3.2.1. Tobin's q

Tobin q is a ratio of capital to installed replacement cost of the specific firm (Tobin, 1969). Number of studies uses q as the dependent variable and it explains the performance of the firm (Abel, 1982, Auerbach, 1983 and Chung and Pruitt, 1994). Tobin's q can be measured by the formula.

Tobin's Q =  $\frac{[(\text{book value of assets} + \text{market value of equity}) - (\text{book value of equity})]}{(\text{book value of total assets})}$ .

##### 3.2.2. Book value of assets

An asset has an economic value with ownership to firm for earning profit. The balance sheet of firm explains what a firm possesses. Total assets of firm comprises on its current and non-current assets. Book value shows the value of an asset of the corporation/firm in its balance sheet annually. The value of net assets is calculated from total assets minus the immaterial asset. The intellectual property of the firm includes trademarks, patents, copyright, brand, and its goodwill and these are known as intangible assets of firm.

##### 3.2.3. Book value of equity

Equity to shareholders is issued from firm and it is value of firm's assets in its income statement. It is the difference between total asset of firm and its liabilities. In account, equity is shown as: [Equity = Assets–Liabilities]. Total assets include current as well as non-current assets. Liabilities are also the sum of current and non-current liabilities.

##### 3.2.4. Market value of equity

The market value of equity can be found out by multiplying total number of share to their market value. The record of total shares of firm is kept through their registration in the financial statements of firm. A separate section is devoted for shareholder equity in this financial statement.

##### 3.2.5. Corporate income tax

Corporate income tax (CIT) is collected from the firm imposed on its income. These taxes are collected by the government. Corporate income tax rates and laws differ from country to country. Some countries have low tax rates to enhance the performance of the firm while other countries charge high rate taxes to generate government revenue for public spending.



### 3.2.6. Asset turnover ratio

Asset turnover explains the ratio of total assets to its sales. Total assets of firm include current asset and non-current asset. The asset turnover of firm is the sales from per dollar of possessions of firm. It can be calculated by formula: Asset turnover = Total Sales/Total Assets.

### 3.2.7. Volume of capital

Volume of capital comprised on the traded shares of firm in the entire market for a certain time period. Volume of capital enhances the performance of firm. The business deal among buyers and sellers increases volume of capital. For example, if ten business deals occur among buyer and sellers in a day, then volume of capital of the firm will be ten for this day. Volume of capital is also measured in a balance sheet of the firm.

### 3.2.8. Liquidity ratio

Liquidity ratio is the ability of the corporation to reimburse its short- and long-term requirements. The liquidity or current ratio of the firm shows the present assets compared with its existing liabilities. It is calculated as: current ratio = existing assets/present liabilities. Liquidity ratio is characterized as current because it explains the current assets and current liabilities of the firm. Current ratio of firm is an indicator of well-functioning of specific firm.

## 3.3. Econometric model

This study utilizes the panel data to investigate the impact of corporate income taxes on financial performance of firms in Pakistan. Firms, in panel data, are experimented at several points in time (years). Fixed effect and random effect models are frequently used in econometric literature for handling panel data. In random effect model, the individual effect firm is a random variable and it is unrelated to included explanatory variables in the model. It is assumed that the variance of individual specific effect is constant. In case of fixed effect model, the individual effect of firm is a random and is related with the included explanatory variables. Further, in case of fixed effect, time invariant features are unique to individual firm and these features are not linked with other individual features. Each firm's (entity's) error term and constant are not correlated with the others as each firm is different. Fixed effect model is found not suitable if error terms are correlated. Under such conditions, it is needed to use random effect model. Hausman test provides the rationale to decide between the appropriateness of fixed or random effect models to estimate the relationship.

Fixed effect model is used on the basis of Hausman test to measure the relationships among corporate income tax, assets turnover and corporate financial performance. Following econometric model is specified to estimate the impact of corporate income taxes and assets turnover on firm financial performance in Pakistan.

$$TQ_{i,t} = \beta_1 + \beta_2 (CIT)_{i,t} + \beta_3 (ATO)_{i,t} + \beta_4 (LR)_{i,t} + \beta_5 (LnVOC)_{i,t} + \varepsilon_{i,t} \dots \dots \dots (4.1)$$

where

TQ = Tobin's Q

CIT = Corporate Income Tax

ATO = Asset Turnover

LR = Liquidity Ratio

LnVOC = Log of Volume of Capital

$\varepsilon_{i,t}$  = Error Term.



**Table 1. Description of variables**

Variables	Description
TQ	It is Tobin's q and measures the financial performance of the firm. Tobin q is a ratio of capital value to the installed replacement cost of the specific firm. It is calculated as a ratio of (book value of assets–book value of equity + market value of equity) to (book value of assets). For example, see Ramadan and Hassan (2022) used Tobin's q to measure firm performance.
CIT	CIT is the corporate income tax and it shows that CIT rates imposed on the income of the firm. For example, see Arora and Gill (2022) disclose that corporate income tax has an impact on firm value in India. Ahmad et al. (2021) find that effective tax has a significant impact on market price and earning per share of firm in UK.
ATO	ATO is the asset turnover ratio of the firm. It is calculated as: Asset Turnover Ratio = Revenues/Total Assets; where revenues of the firm are the total sales and its total assets include the current asset as well as the non-current asset. For example, see Sitanggang (2013) find that asset turnover has a positive impact on the firm financial performance.
LnVOC	VOC shows the volume of capital. LnVOC is the log of VOC. Volume of capital comprised on the traded shares of firm in the entire market for a certain time period. For example, see Chancharat & Kumpamool (2022) find that working capital increases the Tobin's q of the firm.
LR	LR is the liquidity ratio of the firm. The liquidity or current ratio of the firm shows the present assets compared with its existing liabilities. It is calculated as: current ratio = existing assets/present liabilities. For example, see Owolabi and Obida (2012) find a positive relationship between liquidity and profitability of manufacturing companies in Nigeria.

**Table 2. Summary statistics of variables**

Variables	Obs	Mean	Std. Dev.	Minimum	Maximum
TQ	256	0.690	0.233	0.11	1.22
CIT	256	0.277	0.105	0.02	0.69
ATO	256	1.296	1.122	.08	5.51
LnVOC	256	8.475	2.256	4.55	11.26
LR	256	1.563	1.425	0.26	9.66

Note. Authors' own calculation.

#### 4. Results and discussion

The brief description of variables is provided in Table 1.

The summary of variables is given in Table 2.

Correlation among variables is calculated and results are reported in Table 3. The results explain that correlation is as high as –0.536 in the case of TQ and LR. Firm performance is correlated with liquidity ratio of the firm negatively. However, regarding correlation among the explanatory

**Table 3. Correlation matrix of variables**

	TQ	CIT	ATO	LnVOC	LR
TQ	1.000				
CIT	-0.073 (0.248)	1.000			
ATO	0.332* (0.000)	0.022 (0.723)	1.000		
LnVOC	0.270* (0.000)	-0.047 (0.447)	0.098 (0.117)	1.000	
LR	-0.536* (0.000)	-0.086 (0.171)	-0.243* (0.000)	-0.061 (0.333)	1.000

\*Shows significance of pairwise correlation between variables at  $P < 0.01$ .

Note. Authors' own calculation.

variables, it is found that correlation coefficient is below 0.5. It indicates that explanatory variables have no issue of multicollinearity.

Fixed effect model (FEM) is selected for estimation on the basis of Hausman test. The chi-square distribution in our case is given here. The probability value indicates the correctness for the selection of model (Baltagi, 2001). Hausman tests are provided in Table 4.

Keeping in view the results of Hausman test, probability value is found below 0.05. The fixed effect model (FEM) is most eligible for estimation. The results of fixed effect model are given in Table 5.

The multicollinearity in the model is detected using variance inflation factor (VIF). The results of VIF are reported in column 6, Table 5. A value of VIF = 1 indicates that no multicollinearity among explanatory variable and if its value is between 1 and 5. It shows moderate degree of correlation among explanatory variable. We concluded that no multicollinearity is observed in the model.

The results in Table 5 explain that corporate income tax has positive impact on the corporate sector. However, the probability value indicates that corporate income tax substantial relationship with Tobin's q is not significant. We conclude that corporate income tax rate has no relationship

**Table 4. Correlated random effect—hausman test**

Test summary	Chi- square statistic	P-value
Cross-section random	133.89	0.000

Note. Author's own calculation.

**Table 5. Results of fixed effect model**

Variable	Coefficient	St. Error	t-Statistic	P-value	VIF
C	3.612	0.256	14.09	0.000	1.04 (Mean)
CIT	0.069	0.067	1.02	0.307	1.01
ATO	-0.036	0.014	-2.44	0.015	1.07
LR	-0.037	0.005	-6.87	0.000	1.07
VOC	-0.334	0.029	-11.24	0.000	1.01

$R^2$ : within = 0.475, between = 0.121, overall = 0.063.  
 $F(4,236) = 53.45$ ,  $\text{corr}(u_i, X_b) = -0.969$ ,  $\text{Prob} > F = 0.000$ .

Note. Author's own calculation.

**Table 6. Moderating role of liquidity ratio**

Variable	Coefficient	Standard Error	t-Statistic	P-value
C	3.612	0.253	14.26	0.000
CIT	0.097	0.067	1.43	0.153
ATO	0.007	0.022	0.33	0.745
LR	-0.019	0.009	-2.30	0.022
ATO*LR	-0.040	0.015	-2.60	0.010
VOC	-0.338	0.029	-11.47	0.000

R<sup>2</sup>: within = 0.490, between = 0.122, overall = 0.063.  
 F(5,235) = 45.15, corr(ui, Xb) = -0.9700, Prob > F = 0.000.  
 Note. Author's own calculation.

with Tobin's q in Pakistan. King and Fullerton (1984) explained approaches to find the impact of fiscal changes. They found that corporate income tax has a diverse and significant impact on Tobin's q. Gourio and Miao (2010) estimate a negative relationship between corporate tax and investment.

Asset turnover is considered as the activity analysis of the company. The results provided in Table 5 explain that asset turnover has a negative significant relationship with Tobin's q. Assets turnover presents the organization ability and explain that if company's assets turnover increase, Tobin's q of firm will increase. Results of our study are not in line with postulated hypothesis. It explains that volume of sale is not enough to generate a positive relationship of assets turnover with Tobin's q. Liquidity ratio has significant negative on Tobin's q as explained in Table 5.

We find that the liquidity ratio moderates the relationship between assets turnover and Tobin's q. The results are given in Table 6.

Empirical findings in Table 6 explain that liquidity ratio moderated the relationship between assets turnover and Tobin's q. Saleem and Rehman (2011) also explore the relationship between liquidity and firm performance. Ahmed et al. (2009), Akbas and Karaduman (2012), and Kausar et al. (2014) estimate empirical relationship between liquidity ratio and firm performance. Results in Table 5 explain that volume of capital is significantly related to Tobin's q. This relationship is negative and significant. Kausar et al. (2014) measure the volume of capital taking the log of equity and find that it has a positive impact on Tobin's q.

Based upon empirical findings, we conclude that Pakistan has weak industrial structure not supporting firm performance. It may be due to corporate tax structure, lack of competitive goods quality in line with global market and government policies.

## 5. Conclusion and policy recommendations

This study investigates the impact of corporate income taxes and assets turnover on firm financial performance in Pakistan. The panel data of sixteen listed non-financial firms at Pakistan stock exchange are used for the period from 2006 to 2021. Tobin's q is calculated for each firm and used as proxy for firm financial performance. Tobin' q is the dependent variable in the econometric model whereas corporate income tax rate and asset turnover are the explanatory variables. Liquidity ratio and log of capital volume are kept as control variables. Fixed effect model is found suitable for estimation. Theoretical framework of the study is based upon market and resource-based theories.

Results of study indicate that corporate income tax has no significant impact on the firm performance. Asset turnovers, volume of capital and liquidity ratio have negative impacts on firm financial performance in Pakistan. The tax structure of country is supportive to the corporate

sector. Further, firm's own characteristics' including asset turnovers, volume of capital and liquidity ratio are not improving the performance of firm. Policy implications include optimal and efficient corporate tax structure in Pakistan. It will achieve tax collections for government revenues on one hand and also upgrade firm performance. Firm can also devise sale strategies to boost its revenue and value. Further, government can encourage corporate to boost its exports. The structure of corporate sector is complex. Further research studies on this topic are needed to investigate firm performance with other variables and research techniques.

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#### References

- Abel, A. B. (1982). Dynamic effects of permanent and temporary tax policies in a q model of investment. *Journal of Monetary Economics*, 9(3), 353–373. [https://doi.org/10.1016/0304-3932\(82\)90023-X](https://doi.org/10.1016/0304-3932(82)90023-X)
- Ahmad, N., Mobarek, S., Nawazesh, N., & Tan, A. W. K. (2021). Revisiting the impact of ESG on financial performance of FTSE350 UK firms: Static and dynamic panel data analysis. *Cogent Business & Management*, 8(1), 1900500. <https://doi.org/10.1080/23311975.2021.1900500>
- Ahmed, E., & Poddar, S. (2009). GST reforms and intergovernmental considerations in India. *London School of Economics and Political Science, LSE Library*, 26(1), 26–69. [www.lse.ac.uk/collections/asiaResearchCentr](http://www.lse.ac.uk/collections/asiaResearchCentr)
- Akbas, H. E., & Karaduman, H. A. (2012). The effect of firm size on profitability: An empirical investigation on Turkish manufacturing companies. *European Journal of Economics, Finance and Administrative Sciences*, 55(2), 21–27.
- Al-Dhaafri, H., & Alosani, M. S. (2022). Role of leadership, strategic planning and entrepreneurial organizational culture towards achieving organizational excellence: Evidence from public sector using SEM. *Measuring Business Excellence*, 26(3), 378–396. <https://doi.org/10.1108/MBE-02-2021-0021>
- Arora, T. S., & Gill, S. (2022). Impact of corporate tax aggressiveness on firm value: Evidence from India. *Managerial Finance*, 48(2), 313–333. <https://doi.org/10.1108/MF-01-2021-0033>
- Auerbach, A. J. (1983). Taxation, corporate financial policy and the cost of capital. *Journal of Economic Literature*, 21(3), 905–940.
- Auerbach, A. J. (1986). Tax reform and adjustment costs: The impact on investment and market value. *International Economic Review*, 4(30), 939–962.
- Baker, M., & Gompers, P. A. (2003). The determinants of board structure at the initial public offering. *Journal of Law and Economics*, 46(2), 569–598. <https://doi.org/10.1086/380409>
- Baltagi, B. H. (2001). *Econometric analysis of Panel data*. John Wiley & Sons Ltd.
- Cano, C., Carrillat, F., & Jaramillo, F. (2004). A meta-analysis of the relationship between market orientation and business performance: Evidence from five continents. *International Journal of Research in Marketing*, 21(2), 179–200.
- Chancharat, N., & Kumpamool, C. (2022). Working capital management, board structure and Tobin's q ratio of Thai listed firms. *Managerial Finance*, 48(4), 541–556. <https://doi.org/10.1108/MF-08-2021-0361>
- Chung, K. H., & Pruitt, S. W. (1994). A simple approximation of Tobin's q. *Financial Management*, 23(3), 70. <https://doi.org/10.2307/3665623>
- Day, G. S. (2011). Closing the marketing capability gap. *Journal of Marketing*, 75(4), 4183–4195. <https://doi.org/10.1509/jmkg.75.4.183>
- Dobbins, L., & Jacob, M. (2016). Do corporate tax cuts increase investments? *Accounting and Business Research*, 46(7), 731–759. <https://doi.org/10.1080/00014788.2016.1192985>
- Federici, D., Parisi, V., & Elliott, C. (2015). Do corporate taxes reduce investments? evidence from Italian firm-level panel data. *Cogent Economics & Finance*, 3(1), 1–35. <https://doi.org/10.1080/23322039.2015.1012435>
- Financial Statements Analysis of Companies (Non-Financial) Listed At Pakistan Stock Exchange. (2007–2012). *State Bank of Pakistan, Data Services & Innovations Department*. <https://www.sbp.org.pk>
- Financial Statements Analysis of Companies (Non-Financial) Listed At Pakistan Stock Exchange. (2011–2016). *State Bank of Pakistan, Data Services & Innovations Department*. <https://www.sbp.org.pk/>
- Financial Statements Analysis of Companies (Non-Financial) Listed At Pakistan Stock Exchange. (2016–2021). *State Bank of Pakistan, Data Services & Innovations Department*. <https://www.sbp.org.pk>
- Gbohoui, W., & Castro, R. (2016). Stimulative effects of temporary corporate tax cuts. In 2016 Meeting Papers (No. 1332) Society for Economic Dynamics.
- Gourio, F., & Miao, J. (2010). Firm heterogeneity and the long-run effects of dividend tax reform. *American Economic Journal: Macroeconomics*, 2(1), 131–168.
- Grinstein, A. (2008). The effect of market orientation and its components on innovation consequences: A meta-analysis. *Journal of the Academy of Marketing Science*, 36(2), 166–173. <https://doi.org/10.1007/s11747-007-0053-1>
- Habib, S. M., Hussain, H., Mamdouh Abdulaziz Saleh Al-Faryan, M. A., Hussain, R. Y., & McMillan, D. (2022). Impact of firm characteristics and ownership structure on firm efficiency: Evidence from non-financial firms of Pakistan. *Cogent Economics & Finance*, 10(1), 2106628. <https://doi.org/10.1080/23322039.2022.2106628>

- Hall, R. E., & Jorgenson, D. W. (1969). Tax policy and investment behavior: Reply and further results. *The American Economic Review*, 59(3), 388–401.
- Hayashi, F. (1982). Tobin's Marginal q and Average q: A neoclassical Interpretation. *Econometrica*, 50(1), 213–224. <https://doi.org/10.2307/1912538>
- Kausar, A., Nazir, M. S., & Butt, H. A. (2014). Capital structure and firm value: Empirical evidence from Pakistan. *Asian Journal of Research in Economics and Finance*, 1(1), 11–22.
- King, M. A., & Fullerton, D. (1984). The Taxation of Income from Capital: A Comparative Study of the U.S., and W. Germany-Theoretical Framework. Working Paper of National Bureau of Economic Research. <http://www.nber.org/papers/w1058>
- Lee, J. (2009). Does size matter in firm performance? Evidence from US public firms. *International Journal of the Economics of Business*, 16(2), 189–203. <https://doi.org/10.1080/13571510902917400>
- Makhija, M. (2003). Comparing the resource-based and market-based views of the firm. *Empirical Evidence from the Czech Privatisation, Strategic Management Journal*, 24(5), 433–451. <https://doi.org/10.1002/smj.304>
- Mara, M., & Nicoleta, B. M. (2019). The financial performance of European companies: Explanatory factors in the context of Economic Crisis. *Ekinomika*, 98(2), 6–18. <https://doi.org/10.15388/Ekon.2019.2.1>
- Nozick, R. (1994). Invisible-hand explanations. *The American Economic Review*, 84(2), 314–318.
- Owolabi, S. A., & Obida, S. S. (2012). Liquidity management and corporate profitability: Case study of selected manufacturing companies listed on the Nigerian stock exchange. *Business Management Dynamics*, 2(2), 10–25.
- Ramadan, M. M., & Hassan, M. K. (2022). Board gender diversity, governance and Egyptian listed firms' performance. *Journal of Accounting in Emerging Economies*, 12(2), 279–299. <https://doi.org/10.1108/JAEE-02-2021-0057>
- Saleem, Q., & Rehman, R. U. (2011). Impacts of liquidity ratios on profitability. *Interdisciplinary Journal of Research in Business*, 1(7), 95–98.
- Sitanggang, J. (2013). Manajemen Keuangan Perusahaan Lanjutan. In 1st ed. Mitra Wacana Media.
- Summers, H., Bosworth, B. P., Tobin, J., & White, P. M. (1981). Taxation and corporate investment: A q-theory approach. *Brookings Papers on Economic Activity*, (1981 (1)), 67–127. <https://doi.org/10.2307/2534397>
- Tobin, J. (1969). A general equilibrium approach to monetary theory. *Journal of Money, Credit and Banking*, 1(1), 15–29. <https://doi.org/10.2307/1991374>
- Waddock, S. A., & Graves, S. B. (1997). The corporate social performance financial performance link. *Strategic Management Journal*, 18(4), 303–319. [https://doi.org/10.1002/\(SICI\)1097-0266\(199704\)18:4<303::AID-SMJ869>3.0.CO;2-G](https://doi.org/10.1002/(SICI)1097-0266(199704)18:4<303::AID-SMJ869>3.0.CO;2-G)
- Yazdanfar, D. (2013). Profitability determinants among micro firms: Evidence from Swedish data. *International Journal of Managerial Finance*, 9(2), 150–160. <https://doi.org/10.1108/17439131311307565>
- Yermack, D. (1996). Higher market valuation of companies with a small board of directors. *Journal of Financial Economics*, 40(2), 185–211. [https://doi.org/10.1016/0304-405X\(95\)00844-5](https://doi.org/10.1016/0304-405X(95)00844-5)
- Zwick, E., & Mahon, J. (2017). Tax policy and heterogeneous investment behavior. *American Economic Review*, 107(1), 217–248. <https://doi.org/10.1257/aer.20140855>

## Appendix

**Table A1.**

**Number of non-financial listed companies at Pakistan Stock Exchange during 2020 and 2021**

<b>Economic group</b>	<b>2020/2021</b>
1. Textiles	123/119
2. Sugar	27/27
3. Food	19/20
4. Chemicals, chemical products and pharmaceuticals	44/44
5. Manufacturing	38/40
6. Mineral products	9/9
7. Cement	16/17
8. Motor vehicles, trailers and auto parts	20/21
9. Fuel & Energy	21/21
10. Information, communication & transport services	15/16
11. Coke and refined petroleum products	11/11
12. Paper, paperboard and products	9/9
13. Electrical machinery and apparatus	6/6
14. Other services activities	9/9
Total	367/369

**Table A2 List of firms included in the analysis**

- (1) Tobacco Company Limited
- (2) Dawood Hercules Limited
- (3) State Oil Company Limited
- (4) Fauji Fertilizer Company Limited
- (5) Engro Company Limited
- (6) Nestle Pakistan Limited
- (7) Kot Addu Power Company Limited
- (8) Sui Northern Gas Company Limited
- (9) Pakistan Telecommunication Limited
- (10) Pakistan Petroleum Company Limited
- (11) Ayesha Textile Company Limited
- (12) Moonlite Company Limited
- (13) Unilever Company Limited
- (14) Japan Power Company Limited
- (15) Pakistan Hotels Limited
- (16) Mitchell Foods Company Limited





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