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Tax Avoidance, Managerial Ability and Stock Price Crash Risk

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Abstract

Pakistan is facing a dilemma of lower tax revenue to GDP ratio, leading to higher fiscal deficits. Tax is a financial fare imposed on the taxpayers by the state or governing body to fund annual expenses. Tax avoidance (TA) potentially increases the cash flows of the firm. The Stock Price Crash Risk (SPCR) is an essential factor for investors and economic agents in making financial and investment decisions. Several studies employed the agency theory framework for determining the probability of a stock price crash. . The study aims to investigate the impact of TA activities on SPCR in Pakistan. This study used panel data covering period from 2009 to 2020 of 60 non-financial firms from KSE-100 index listed on the Pakistan Stock Exchange (PSX). The financial statements data was collected from SECP, PSX and State Bank of Pakistan. Managerial Ability (MA) was employed as moderator for the relationship between TA and SPCR. The results show that increase in TA activities by the firm increases the SPCR. It is also found that the MA plays a moderating role as able managers can reduce the impact of TA on SPCR. The capable tax management team in the company may reduce TA. Practical implications and contributions of the research include improving the literature, providing new insight for investors and portfolio managers in investment decision making. It would be helpful for the Government, policymakers, and regulators for developing and implementing an effective framework to reduce the tendency of TA.

Keywords: Tax Avoidance, Managerial Ability, Stock Price Crash Risk.

INTRODUCTION

Pakistan is facing the dilemma of lower tax revenue to GDP ratio that leads to higher fiscal deficits. Therefore, it is inevitable to understand the effect of tax avoidance (TA) at various levels. TA has the potential to affect stock returns and market efficiency, leading to bad news hoarding and increased risk for investors. Able managers may reduce the likelihood of SPCR, which has not been examined in the Pakistani context. TA is unethical and immoral conduct in a democratic cultural society. In Pakistan, its determinants include lack of public awareness campaigns, complex relationship between taxpayers and authorities, lack of transparency, inadequate tax incentives, and ignorance of tax calculation procedures. In the current global economic uncertainty, it is important to investigate the factors affecting the SPCR. The capable managers withhold the bad news and hide other negative information from the public when it crosses a certain threshold, the negative information explode, causing stock price crash (Hutton *et al.*, 2009). Managers hide negative news from investors due to incentive and career

considerations, which is the main predictor of SPCR. Tax can be defined as economic charge imposed by the government on the taxpayer like individual or firm to meet its expenses. A basic and broadly accepted definition of TA is the lawful minimization of tax liabilities to apply solid financial strategic actions and plans. Some believe that TA is an immoral activity. Barker, (2008) define TA as the philosophy that promotes the freedom to avoid paying a rational share of taxes; it is unethical and immoral conduct in a democratic cultural society. The main issues that causes TA includes the lack of public awareness campaigns, an existence of complex relationship between taxpayers and authorities, absence of transparency in the tax matters, insufficiency of tax incentives to the taxpayers and lack of awareness of the tax calculation procedures. The largest source of state income or revenue is taxes. Minimization provides the likelihood for managers to be involved or participate in activities that are equivalent to withhold the bad news and mislead the investors (Desai and Dharmapala, 2006). Minimization activities are used by managers to alter earnings and hide bad news, increasing the likelihood of SPCR. This can be done through audit committees and external auditors.

Previous research by Hutton *et al.,* (2009) linked the decrease in SPCR to the executive holding of bad news. Managers got motivation to conceal unfavorable news in order to advance their careers and receive short-term rewards (Kothari *et al.*, 2009). However, there seems to be a maximum limit beyond which management finds too costly or difficult to continue hiding unfavorable news; however, they cannot forecast when this point would be reached. At this stage, it was hard to contain the withheld bad news, resulting in a rapid, dramatic decline in stock prices, sometimes referred to as a stock price crash (Chen *et al.*, 2017). SPCR is risk refers to the probability of a stock price decline due to the accumulation of negative information (Hutton *et al.*, 2009).

The concealment of negative news could be anything that, if made public, would cause a reduction in stock price. A stock price fall greatly affects investor interest in the financial firms which hurts financial firm's stability, and even causes resource misappropriation in the economy. Price crash risk differs from typical risk assessments and is hard to diversify (Luo *et al.*, 2016). Risk evaluation is essential for economic management decision-making (Kim *et al.*, 2014). Researchers, business owners and legislators have been looking into the root causes of such financial crises, with a special focus on the rising research on the link between SPCR and corporate misconduct, namely the opportunist behavior of bad news hoarding(Chang *et al.*, 2017). Managers may act opportunistically by withholding negative news because, in modern organizations, ownership and control are separate, leading to conflict of interest between managers and shareholders.

This conflict of interest motivates managers to hide or postpone the publication of bad information about the organization in order to pursue self-interests. However, this can lead to external investors overvaluing the price of the stock and investing in initiatives with negative net present value, resulting in stock price inflation. According to Xu et al., (2014), executive compensation consists of a base salary and CASH_ETR incentive, but managers are often forced to pursue excessive bonus consumption. Crash risk is a significant risk to individual investors due to frequent and large price fluctuations and inadequate diversification in their portfolios. This research focuses on crash risk, a subset of broader stock price risk, and stock price crash, a quick and significant price decline that is often precipitated by the disclosure of accumulated unfavorable news. Many previous studies have examined TA activities but have not been discussed within the

terms of SPCR particularly in the context of Pakistan. The connection between TA and the SPCR is a phenomenon that needs to be addressed. This study examined the effects of TA on the SPCR of Non-Financial Firms listed on the PSX 100 index. It also assessed the moderating role of Managerial Ability (MA) on relationship between TA and SPCR. The study has positive associations for financiers and shareholders as it provides a better understanding of the implications of TA in negative manners, which can be reduced by able managers.

This study focused on following two research questions. (1) Whether Tax Avoidance has an impact on Stock Price Crash Risk? (2) Whether Managerial Ability moderates the relationship between Tax Avoidance and Stock Price Crash Risk? This research adds to the literature by discovering the relationship between TA and SPCR. It has implications for portfolio managers and financiers in making investment and risk management decisions, and provides new insight for the state, policymakers, and regulators for developing and implementing an effective framework to reduce TA. The rest of the paper is structured like this: Section 2 explores prior literature on the topic. Materials and methods are presented in Section 3. The empirical results are covered in section 4. Paper is concluded in section 5.

LITERATURE REVIEW

Tax Avoidance

TA is a compassionate issue for companies, as the taxpayer has the right to ease the tax obligations and load. Investors are interested in it as a value-adding activity. According to Phillips *et al.*, (2003) and Desai and Dharmapala, (2006), both tax authorities and stakeholders share the goal of reducing a company's diverting activities. Desai and Dharmapala, (2006) highlighted, a tax system approach affects the managerial abilities which occur within the company. However, the company owners can enjoy the benefit of higher profits. If the company is found guilty of TA activities, it may be liable or pay tax penalties or liabilities which could lead to stock price crack risk. If a company is found dishonest during an audit, the company must be faced the tax authorities' sanction (Frank *et al.*, 2009). Agency conflicts are included in the sight of TA, such as managerial or resource distraction Desai *et al.*, (2009).

Shareholders would like the management to be involved in TA for interest in the marginal advantages of tax forecasting operations about the growth in the marginal costs. Desai *et al.*, (2009) focus on the ability of corporate governance to determine TA behavior. Blaufus et al., (2019) differentiated the TA and tax evasion by analyzing 176 tax news items for publicly traded German companies from 2003 to 2016. They asserted that stock market reactions changed depending on whether the news was about legal or unlawful operations. However, when corporations' tax risk was modest, stock price reactions to legitimate tax preparation were favorable. This adds to the ongoing debate about the benefits and costs of corporate tax tactics. TA activities or actions can be employed to facilitate the managers, who face increasing costs due to asymmetric information (Dhaliwal *et al.*, 2011). The Agency Theory applies to TA when there is conflict between managers and investors. This can lead to illegal acts that violate the law, such as resource-diverting operations and TA transactions. Companies may give those engaged

in resource-diverting operations tools, covers, and justifications to reduce the tax amount payable (Hussain et al., 2019).

Stock Price Crash Risk

Management's opportunistic conduct of stockpiling negative knowledge can lead to a rapid stock price drop, while information asymmetries created by the principal-agent issue can explain the risk. Kothari et al., (2009) assessed the likelihood of a stock market crash as a result of bad news and hoarding unfavorable information being public. Several studies use the agency theory framework developed by Jin and Myers, (2006) for determining the probability that a stock market crash. In their view, the stock market crashes are caused by asymmetries in information between management and investors. Crash risk occurs when a company's bad news has been hoarded over a threshold level and is suddenly accessible to investors (Hutton *et al.*, 2009). SPCR could be caused by TA, showing high financial performance, ambiguous financial reporting, and senior executive such as CEO encouragement plans (Kim *et al.,* 2011). Many researchers previously study on other factors that affect SPCR like.

Lot of previous research studies have discovered a variety of factors that contribute to the SPCR such as corporate Tax Avoidance (Li *et al.*, 2017), Managerial Ability (Hasan *et al.,* 2017), CEO overconfidence (Kim *et al.,* 2016), and CEO age (Andreou *et al.,* 2017). Habib *et al.,* (2017) found that highly capable managers made rational investment decisions; SPCR is found to be lower. However, they may bury negative news due to career concerns which may leads to SPCR. This study found that there is a "human dimension" associated with management's ability to explain SPCR (Habib & Hasan, 2017).

Previous research has focused on the return distribution's mean and variance, but this is precarious for making management decisions. They observed that equities that are opaque are more likely to fall, so they produce a measure of opacity based on earnings companies, find positive media reports to minimize the SPCR, and combine media attention with more positive information to lower the Chances of a Stock Market Crash.

Managerial Ability (MA)

This study employed the MA as a moderator for the relationship between TA and SPCR in Pakistan. Kothari et al., (2009) identified the managers' tendency to suppress unpleasant news is consistent with tax information. However, the MA's ability to hide bad news has become too costly or lethal for the organization. When something changes dramatically, all previously negative news is revealed simultaneously, that result in a significant stock crash (Hutton *et al.,* 2009). This study looked at how TA is linked to the likelihood of an SPCR, as it can give managers the ability to hide negative news and manipulate the company's financial position. Auditors' decisions are influenced by management ability, and when the auditor fee is controlled, it decreases the probability of Risk (P. R. Demerjian et al., 2013; Krishnan & Wang, 2015). Baik et al., (2017) investigated the relationship between management skills and the standard of a company's information environment. This research looked at the impact of TA on SPCR from the perspective of an agency, motivated by new hypotheses regarding management abilities or actions that contribute to the withholding of bad news (Habib *et al.,* 2018).Inam Bhutta et al., (2021) investigated the impact of management skills on company success by studying 246 firms registered on the PSX for period covering from 2009 to 2017. It was found that skilled managers make

a big difference in business success, whereas less capable managers cause significant reduction in firm performance. It was also discovered that capable managers increase the value of a company, with the effects being higher in financially pressured companies. This study adds to the growing body of evidence that good managers bring intangible resources to their companies, helping them perform better even in difficult times.

HYPOTHESIS DEVELOPMENT

Thai et al., (2023) suggested the positive relationship between TA and SPCR. Causing to asymmetric information TA potentially form bad news hoarding that leads to SPCR. Garg et al., (2020) assessed the effect of TA on SPCR and found the positive association between them. Firms with SPCR use aggressive tax strategies to minimize liability, resulting in TA transactions (McGill & Outslay, 2004). TA has a positive correlation with local stock crash risks due to withholding information from administrations, as evidenced by (J.-B. Kim et al., 2011a). TA encourages managers to engage in unethical conduct and keep bad reports hidden, trigger a risk of price crash. The link between TA and SPCR is based on two assumptions: TA pushes administrators to engage in unethical conduct and encourages them to keep bad reports concealed. Management competency lifts up the information environment of a firm, leading to higher-quality earnings and TA (P. R. Demerjian et al., 2013). This research seeks to investigate the systematic facts for determining the link between TA and SPCR and mitigating the impact of management skills by the following two hypotheses: (1) TA is positively associated with SPCR. (2) MA moderates the association between TA and SPCR.

MATERIALS AND METHODS

Data

In this study, panel data was used to analyze non-financial firms (covering both manufacturing and service sectors) traded on the PSX, with 60 non-financial firms being studied. Financial statements data were collected from the official websites of the PSX, SECP and SBP for period covering from 2009 to 2020. This selection provides a final sample of 720 weekly observations, and all data are winsorized at 1% in order to address the effect of outliers. Data about share prices were gathered from the websites of PSX and business recorder. Descriptive statistics of data were measured. The Software for Statistics and Data Science (STATA) was employed for the analysis of data. For hypothesis testing, we used the Fixed Effect Model (FEM). Diagnostic test were applied in order to understand the data suitability for analysis and to identify the potential problems associated with panel data.

Variables

Hanlon *et al.,* (2010) surveyed the prior literature and found that a number of measurers were used for calculation of TA. In recent research work, three proxy of TA were used, such as, GAAP_ETR, CASH_ETR, and BTD_ETR. The GAAP_ETR stands for the generally accepted accounting principles effective tax rate that is measured by dividing total tax amount by income before taxes. CASH_ETR is measured by dividing cash taxes paid to unadjusted income before tax, as defined by (Chen *et al.,* 2001). Lower TA is indicated by higher GAAP_ETR and CASH_ETR. BTD_ETR stands for the difference between taxable and book income.

Measuring MA

In prior literature MA is calculated by using various proxies ranging from such as media citations to industry-adjusted returns however these proxies are not considered suitable due their beyond-control characteristic. Data envelopment analysis (DEA) employed by Demerjian *et al.,* (2012) as the proxy for managerial skill and has been utilized in a number of researches since Demerjian *et al.,* (2013). A two-stage calculation technique is being used to compute DEA, Initially to measure total firm efficiency in industries. Then sales of each firm are compared with the inputs used by the corporation, such as cost of products sold, general & administrative costs, net assets, equipment & machinery, margin lease agreements, net R&D expenditures, expenses to purchase goods and other intellectual properties (Demerjian *et al.,* 2012). Employing these factors and allowing optimization process the investment efficiency is measured. It is further regressed on six characteristics of firm reflecting firm efficiency such as availability of cash, firm life cycle stage, operational complexity, size of the firm, foreign operations and firm market. The managerial ability is reflected through the residual from this model.

$$Firm\ Efficiency_i = \alpha_0\pi + \alpha_1 Ln(Total\ Asset)_i + \alpha_2 MarketShare_i + \alpha_3 PostiveFreeCashFlow_i + \alpha_4 Ln(Age)_i + \alpha_5 Business_i + \alpha_6 Segmentconcentration_i + \alpha_7 ForeignCurrencyIndicator_i + YearIndicator_i + \varepsilon_i \quad (1)$$

Measuring SPCR

Chen *et al.,* (2001) introduced the different proxies to calculate SPCR. Building on earlier research e.g., Y. Kim et al., (2014), we estimated our SPCR by using NCSKEW and DUVOL, which were relying on the market model extended by leads and lags. We begin by regressing each sample firm's weekly stock returns on the value-weighted market return (VWMR), with a two-week lag and lead VWMR, as shown below

$$r_{i,\tau} = \alpha_i + \mathfrak{b}_{1,i}\, r_{m,\tau-2} + \mathfrak{b}_{2,i}\, r_{m,\tau-1} + \mathfrak{b}_{3,i}\, r_{m,\tau} + \mathfrak{b}_{4,i}\, r_{m,\tau+1} + \mathfrak{b}_{5,i}\, r_{m,\tau+2} + \epsilon_{i,\tau} \quad (2)$$

where $r_{i,\tau}$ represents the return of firm *i* for week τ, $r_{m,\tau}$ represents the market return for week τ, and $\epsilon_{i,\tau}$ is an error term. Firm specific weekly return (F-SWR) denoted by $W_{i,\tau}$ for firm *i* at week τ, was then computed using equation (2):

$$W_{i,\tau} = \ln(1 + e_{i,\tau}) \quad (3)$$

To represent the asymmetries of the return distribution, we base our first proxies on skewness, so we choose NCSKEW as our first proxy for SPCR. This approach limits the asymmetries of distribution returns and has been described numerous times in prior studies. Negative numbers for the skewness describe left-skewed data, while positive values explain right-skewed data. NCSKEW is measured as following:

$$NCSKEW_{\mathrm{i,t}} = -\frac{\left[\left[n(n-1)^{\frac{3}{2}}\sum W_{i,\tau}^3\right]\right]}{\left[(n-1)(n-2)\left(\sum W_{i,\tau}^2\right)^{\frac{3}{2}}\right]} \quad (4)$$

This value is multiplied by -1, with a greater value indicating a higher tail risk. Another indication of SPCR is the DUVOL of F-SWR. We base our 2nd proxy on DUVOL since the absence of the 3rd instant limits to an over and excessive week returns (Habib & Hasan,

2017). F-SWR results are divided into two main categories: 'down weeks' & 'up weeks.' The 'down weeks' have lower returns than the yearly mean, while the 'up weeks' have higher returns than the annual mean. The SD of F-SWR is then computed for each category. Finally, we calculate DUVOL as the natural log of the SD ratio in the down weeks divided by the SD in the up weeks to obtain DUVOL of F-SWR of firm *i* in year *t* thatwe compute when the returns are higher and lower the annual mean. Where n_u denotes the number of up and n_d represent down weeks for the firm *i* in the year *t*,respectively. A high crash risk is indicated by the greater $DUVOL_{\mathrm{i,t}}$ value.

$$DUVOL_{\mathrm{i,t}} = log\frac{[(n_u-1)(\sum_{Down}W_{i,\tau}^2]}{[(n_d-1)(\sum_{Up}W_{i,\tau}^2]} \qquad (5)$$

Control variables

We used a variety of control variables that were shown in the studies to be the driver of SPCR (Habib *et al*. 2018). As studies show, firm size (FS), leverage (LEV), and return on asset (ROA) are also controlled (Jebran *et al*. 2019; Jebran *et al.* 2022). Similarly, a company with a high debt-to-asset ratio is more likely to undergo a SPCR (Zaman et al., 2021).

Model Specification

The study estimates the following regressions to test the hypothesis described above by taking two different proxies for SPCR such as NCSKEW and DUVOL, as under:

Model for SPCR by using NCSKEW is

$$NCSKEW_{i,\tau} = \alpha_i + \beta_1 TA_{i,\tau-1} + \beta_2 Control\,Variables + \beta_3 \sum Year + \beta_4 \sum Firm + \epsilon_{i,\tau} \quad (6)$$

Model to test for moderation effect of MA is

$$NCSKEW_{i,\tau} = \alpha_i + \beta_1 TA_{i,\tau-1} + \beta_2 MA_{i,\tau-1} + \beta_3 TA_{i,\tau-1} * MA_{i,\tau-1} + \beta_4 Control\,Variables + \beta_5 \sum Year + \beta_6 \sum Firm + \epsilon_{i,\tau} \qquad (7)$$

Model for SPCR by using DUVOL is

$$DUVOL_{i,\tau} = \alpha_i + \beta_1 TA_{i,\tau-1} + \beta_2 Control\,Variables + \beta_3 \sum Year + \beta_4 \sum Firm + \epsilon_{i,\tau} \quad (8)$$

Model to test for moderation effect of MA is

$$DUVOL_{i,\tau} = \alpha_i + \beta_1 TA_{i,\tau-1} + \beta_2 MA_{i,\tau-1} + \beta_3 TA_{i,\tau-1} * MA_{i,\tau-1} + \beta_4 Control\,Variables + \beta_5 \sum Year + \beta_6 \sum Firm + \epsilon_{i,\tau} \qquad (9)$$

Table 1.
Variables names and their proxies

Sr. No	Type of Variables	Name of Variables	Proxy Measures
01.	Independent	Tax Avoidance (TA)	*GAAP_ETR, Cash ETR*
02.	Dependent	Stock Price Crash Risk (SPCR)	*NCSKEW and DUVOL, (Chen et al. 2001)*
03.	Moderator	Managerial Ability (MA)	*DAE (Demerjian et al., 2012)*
04.	Control	Firm Size (FS)	*Natural Log of TotalAssets*
05	Control	EPS	*Net Income/TotalShare Issued*
06	Control	ROA	*Net Income/TotalAssets*

07	Control	Leverage(Lev)	*Total Liabilities/TotalAssets*
08	Control	Sigma	*SD of F-SWR of Firm i in year t-1.*
09	Control	RET	*Mean of F-SWR weekly returns over a year.*

Descriptive Statistics

Summary statistics were calculated for SPCR, TA and controlling variables to describe the characteristics of the data. Table 4.1 shows the average value of DUVOL and NCSKEW are 0.4834 and 0.0803, respectively, which are consistent to the parameters reported by Kim et al. (2011). The central values of the three measures of TA, namely GAAP_ETR, CASH_ETR and BTD are 1.0554, 0.3992 and 0.0537, respectively. The measure of managerial competence, MA, has a mean of 0.0067, and a standard deviation of 0.3771. ROA (10.1973), EPS (19.2992), Firm Size (7.6087), Sigma (0.2261), RET (0.0827), Leverage (3.6095) are more or less consistent with prior research.

Table 2.
Summary Statistics

Variable Type	Variable Name	Obs	Mean	SD	Min	Max
Dependent Variables	$NCSKEW_{i,\tau}$	720	0.0803	0.9087	-3.3804	5.4403
	$DUVOL_{i,\tau}$	720	0.4834	1.4427	-6.3567	1.7784
Independent Variables	$GAAP\_ETR_{i,\tau}$	720	1.0554	3.4404	-0.5950	3.8938
	$CASH\_ETR_{i,\tau}$	720	0.3992	1.3592	-0.0102	0.4177
	$BTD\_ETR_{i,\tau}$	720	0.0537	0.2081	-0.0651	0.2274
Moderator Variable	$MA_{i,\tau}$	720	0.0067	0.3771	0.0003	0.8614
Control Variable	$ROA_{i,\tau}$	720	10.1973	12.1855	-1.3230	26.15
	$EPS_{i,\tau}$	720	19.2992	30.5800	-0.58	50.06
	$FS_{i,\tau}$	720	7.6087	1.0630	0.3845	9.2567
	$Sigma_{i,\tau}$	720	0.2261	0.4647	0.0287	0.883
	$RET_{i,\tau}$	720	0.0827	0.56039	-0.5081	0.7419
	$Lev_{i,\tau}$	720	3.6095	5.0936	0	6.79

RESULTS

Correlation Analysis

The correlation matrix table presents the outcomes of the correlation test conducted between the variables in the primary analysis. These results are further supported by a two-tailed test. As anticipated and consistent with previous research, CRASH, NCSKEW, and DUVOL demonstrate a strong correlation. Notably, the TA measures, particularly GAAP_ETR, show a positive correlation with NCSKEW and DUVOL, while CASH_ETR and BTD_ETR exhibit a negative correlation with these variables. This aligns with earlier findings by Kim et al., (2011), which highlighted TA as a reliable predictor of future SPCR. The absence of multicollinearity among predictor variables confirms the robustness of the model. Interestingly, a positive relationship was anticipated between SPCR and both BTD_ETR and CASH_ETR, as these indicators typically reflect higher tax payments. However, the results reveal a negative and significant association between GAAP_ETR and SPCR. Consistent with previous research by Chan et al. (2013), NCSKEW and DUVOL are shown to be strongly correlated. Additionally, the negative measurement for GAAP_ETR aligns with findings from Kim et al., (2011).

Regression results using GAAP_ETR

Table 4.3 reports the regression results of SPCR on TA by taking GAAP_ETR as its proxy and set of other variables as control variables. In order to incorporate MA as moderator the interaction term i.e. $GAAP\_ETR_{i,\tau} * MA_{i,\tau}$ was introduced into the model. Given that lowering value of GAAP_ETR reflects increase in TA, regression results with negative coefficient at 1% level of significance indicate that decrease in value of GAAP_ETR increases the SPCR. That shows the corporations with higher TA tendency is more likely to have SPCR. Further analyzing the moderating effect of MA on relationship between TA and SPCR, the result of coefficient of interaction term is significant which shows that moderating effect of MA exist. This can be interpreted as the able managers reduce the positive association between TA and SPCR. This also suggests that firms with higher MA and higher effective tax rates are less likely to experience SPCR. Furthermore, the coefficient for MA_SCORE*GAAP_ETR indicates that as this interaction term moves from the lower to the upper quartile, the risk of a crash decrease.

TABLE 2:
Correlation Matrix

	$NCSKEW_{i,\tau+1}$	$DUVOL_{i,\tau+1}$	$GAAP\_ETR_{i,\tau}$	$CASH\_ETR_{i,\tau}$	$BTD\_ETR_{i,\tau}$	$MA_{i,\tau}$	$ROA_{i,\tau}$	$EPS_{i,\tau}$	$FS_{i,\tau}$	$Sigma_{i,\tau}$	$RET_{i,\tau}$	$Lev_{i,\tau}$
$NCSKEW_{i,\tau+1}$	1											
$DUVOL_{i,\tau+1}$	0.7830	1										
$GAAP\_ETR_{i,\tau}$	-0.0292	-0.0792	1									
$CASH\_ETR_{i,\tau}$	0.0142	0.0173	0.7103	1								
$BTD\_ETR_{i,\tau}$	0.0512	0.1183	-0.2675	-0.2357	1							
$MA_{i,\tau}$	0.0318	0.0030	0.0091	-0.0057	0.0177	1						
$ROA_{i,\tau}$	0.0492	0.0777	-0.1308	0.2156	0.5874	0.0111	1					
$EPS_{i,\tau}$	0.0491	0.0521	-0.0174	0.2472	0.4177	0.0067	0.3754	1				
$FS_{i,\tau}$	0.0537	0.1483	0.0336	-0.0735	-0.1535	-0.0299	-0.0979	0.0238	1			
$Sigma_{i,\tau}$	-0.0185	-0.2390	0.0967	0.0266	-0.1225	0.0331	-0.167	-0.064	-0.176	1		
$RET_{i,\tau}$	-0.0381	0.1196	0.0021	0.0411	0.2001	-0.0358	0.0885	0.0698	-0.0841	-0.0972	1	
$Lev_{i,\tau}$	-0.0235	-0.0839	0.0729	-0.2382	-0.3406	-0.0123	-0.369	-0.213	0.105	0.0559	-0.0130	1

TABLE 4.

Variables	$NCSKEW_{i,\tau+1}$				$DUVOL_{i,\tau+1}$			
	β_i	p	β_i.	p	β_i	p	β_i	p
$GAAP\_ETR_{i,\tau}$	-0.0025	0.000	-0.0003	0.000	-0.0013	0.046	-0.0011	0.017
$GAAP\_ETR_{i,\tau} * MA_{i,\tau}$			0.0013	0.037			0.0008	0.031
$ROA_{i,\tau}$	0.0062	0.14	0.0062	0.14	0.0005	0.64	0.0004	0.721
$EPS_{i,\tau}$	0.0001	0.953	0.0002	0.935	-0.0001	0.969	-3.6010	0.948
$FS_{i,\tau}$	0.1200	0.09	0.1200	0.091	0.0601	0.001	0.0606	0.001
$Sigma_{i,\tau}$	0.0992	0.616	0.1006	0.612	-0.2800	0.000	-0.2829	0.000
$RET_{i,\tau}$	-0.0783	0.234	-0.0772	0.242	0.0486	0.003	0.0473	0.004
$Lev_{i,\tau}$	0.0007	0.974	0.0006	0.976	-0.0086	0.083	-0.0092	0.066
Constant	-1.0348	0.07	-1.0371	0.07	-0.3520	0.1428	-2.4600	0.014
Year FE	Yes		Yes		Yes		Yes	
Firm FE	Yes		Yes		Yes		Yes	

Regression results using CASH_ETR

Table 4.4 reports the regression results of SPCR on TA by taking CASH_ETR as its proxy and set of other variables as control variables. In order to incorporate MA as moderator the interaction term i.e. $CASH\_ETR_{i,\tau} * MA_{i,\tau}$ was introduced into the model. The results are consistent with the result drawn in previous Table 4.3 which is in-line with our expectation developed from strong correlation between two proxies of TA i.e. $GAAP\_ETR_{i,\tau}$ and $CASH\_ETR_{i,\tau}$. The significant value of coefficient depicts the negative strong relationship between the value $CASH\_ETR_{i,\tau}$ and $NCSKEW_{i,\tau+1}$ which can be interpreted as the higher TA results in increase in SPCR. With regard to the moderating role of MA on relationship between TA and SPCR, the result confirms the earlier finding that able managers weaken the relationship between TA and SPCR.

TABLE 5.

Variables	$NCSKEW_{i,\tau+1}$				$DUVOL_{i,\tau+1}$			
	β_i	p	β_i	p	β_i	p	β_i	p
$CASH\_ETR_{i,\tau}$	-0.0410	0.009	-0.0057	0.001	-0.0188	0.007	-0.0308	0.001
$CASH\_ETR_{i,\tau} * MA_{i,\tau}$			0.6650	0.005			0.1842	0.013
$ROA_{i,\tau}$	0.0009	0.0036	0.0007	0.8430	0.0008	0.4720	0.0006	0.5380
$EPS_{i,\tau}$	0.0036	0.0019	0.0035	0.0710	-0.0001	0.9550	-0.0001	0.9270
$FS_{i,\tau}$	0.0795	0.0613	0.0803	0.1910	0.0591	0.0010	0.0594	0.0010
$Sigma_{i,\tau}$	0.3381	0.1713	0.3378	0.0490	-0.2812	-	-0.2856	-
$RET_{i,\tau}$	-0.1611	0.0569	-0.1660	0.0040	0.0482	0.0040	0.0473	0.0040
$Lev_{i,\tau}$	0.0081	0.0174	0.0089	0.6120	-0.0092	0.0710	-0.0100	0.0490
Constant	-0.6953	0.4978	0.1630	0.6726	-0.3559	0.0140	-0.3478	0.0170
Year FE	Yes		Yes		Yes		Yes	
Firm FE	Yes		Yes		Yes		Yes	

Regression results using BTD_ETR

Table 4.5 reports the regression results of SPCR on TA by taking BTD_ETR as its proxy. This proxy different in nature from other two proxies of tax avoidance as correlation coefficient values between BTD_ETR and other proxies are negative. As expected, the coefficients on BTD are positive and significant at the 1% level so the positive significant value of coefficient on BTD_ETR shows that increase in BTD_ETR result in proxies of SPCR. This can be interpreted as firms with higher TA likely to have higher SPCR. This shows that the result from this model is consistent with the result of models based on other proxies of tax avoidance. In order to incorporate MA as moderator the interaction term i.e. $BTD\_ETR_{i,\tau} * MA_{i,\tau}$ was introduced into the model. The results are consistent with the result drawn in previous Table 4.3 which is in-line with our expectation developed from strong correlation between two proxies of TA i.e. $GAAP\_ETR_{i,\tau}$ and $CASH\_ETR_{i,\tau}$

TABLE 6.

Variables	$NCSKEW_{i,\tau+1}$				$DUVOL_{i,\tau+1}$			
	β_i	p	β_i	p	β_i	p	β_i	p
$BTD\_ETR_{i,\tau}$	0.0031	0.002	0.0047	0.005	-0.0189	0.001	0.03076	0.002
$BTD\_ETR_{i,\tau} * MA_{i,\tau}$			-0.6160	0.003			-0.1842	0.015
$ROA_{i,\tau}$	0.0060	0.104	0.0007	0.430	0.0008	0.4720	0.0007	0.249
$EPS_{i,\tau}$	0.0012	0.002	0.0046	0.0710	-0.0001	0.9550	-0.0001	0.159
$FS_{i,\tau}$	0.0712	0.061	0.0904	0.1910	0.05912	0.0010	0.0674	0.001
$Sigma_{i,\tau}$	0.1392	0.412	0.4371	0.0490	-0.3921	0.008	-0.1956	0.566
$RET_{i,\tau}$	-0.1941	0.027	-0.1660	0.0040	0.0379	0.0040	0.0473	0.004
$Lev_{i,\tau}$	0.0043	0.018	0.0089	0.0120	-0.0071	0.0710	0.0101	0.051
Constant	-0.7136	0.097	0.2630	0.730	-0.4470	0.0140	-0.1178	0.0170
Year FE	Yes		Yes		Yes		Yes	
Firm FE	Yes		Yes		Yes		Yes	

FINDINGS & CONCLUSION

The SPCR is most important thing to think about while making financial decisions and managing risk. The current global financial crisis has sparked authorities', managers', and researchers' interest in SPCR, and a growing body of studies investigates the factors that influence SPCR. We used panel data to analyze non-financial firms (including both manufacturing & service sectors) listed on PSX by targeting KSE-100, take data of 60 non-financial firm. In this study, the data collected over the period of 2009 to 2020 from the official website of PSX, SBP & SECP. STATA was used for analysis of data. GMM for hypothesis testing was applied. This study concludes that listed firms having tendency of TA are likely to face SPCR as it is positively associated with TA activities and it validate the findings of (J.-B. Kim et al., 2011a). Study also substantiate that MA can play the role as moderator by weaken the relationship between TA activities and SPCR, that TA firms with a more able management team are less likely to experience the SPCR (Garg et al., 2020).

The results are found to be robust across different proxies of TA. The research was contributed in different perspectives. Firstly, this study improves the literature by discovering relationship between TA and SPCR in the presence of managerial quality for the perspective of emerging economy like Pakistan. Secondly, this research has ramifications for investors & portfolio managers in making investment and risk management decisions. Thirdly, this study provides new insight for the Government, policymakers, and regulators for developing and implanting an effective framework to reduce the tendency of TA. Future research may be investigated the impact of TA and Tax evasion with other element of Bad news hording to measure the impact on SPCR in order to enhance its understanding to use the complete financial and non-financial firm's data in the Pakistani context.

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