

MONETARY POLICY, AUDIT QUALITY AND TAX AVOIDANCE: A CASE OF PAKISTAN

Muhammad Khurram SHABBIR ¹, Ishtiaq AHMAD ^{2*}, Domicián MÁTÉ ^{3, 4}

^{1, 2}*Department of Management Sciences, NUML, Islamabad, Pakistan*

³*Department of Engineering Management and Entrepreneurship, Faculty of Engineering, University of Debrecen, Debrecen, Hungary*

⁴*DHET-NRF Sarchi Entrepreneurship Education, Department of Business Management, University of Johannesburg, Johannesburg, South Africa*

Received 25 January 2023; accepted 4 April 2023

Abstract. Although tax avoidance and evasion concerns have long been recognised, tax compliance in emerging nations has received improved attention with the global and financial crises. This study examines the impacts of monetary policy and audit quality on tax avoidance of 295 public limited firms listed in the Pakistan Stock Exchange (PSX) between 2011 and 2020. Results of panel regression analyses show that the monetary policy interest rates affect the accounting tax avoidance and the Effective Tax Ratios (ETR) differently over time. In contrast, monetary policy is not substantial with the cash ETR, but the external audit fee negatively affects the tax avoidance indicators. These results provide an imperative consideration for practitioners and policymakers better to judge interest rates and their influence on tax behaviour to provide policy incentives for progressive taxation and sustainable development.

Keywords: audit quality, corporate tax avoidance, interest rates, monetary policy, tax compliance.

JEL Classification: E52, E63, F38, H83.

Introduction

Multiple crises in emerging nations constitute a significant hindrance to their sustainable development. The current challenges of tax evasion and tax avoidance were acknowledged to reduce tax liabilities legally, despite the growing area of tax avoidance, which is unacceptable, relied upon misinterpretation and unpredictability of tax laws (Oats & Tuck, 2019). Tax avoidance activity is defined as ... “including all that minimises the firms’ taxes of earnings before tax (EBT) liabilities...” (Dyregang et al., 2019). However, the discussion of tax avoidance has been ongoing, and the need for public accountability of tax avoidance has gained importance to reduce uncertainty (Verbeken et al., 2022).

Previous accounting approaches have followed various tax strategies to increase revenues, such as improper classification of financial statements, tax deferral and tax shelter (Graham & Tucker, 2006). More importantly, country-specific tax policies and governance structures are unique in affecting tax avoidance activity (Atwood et al., 2012).

The taxation literature has identified various components that may impact tax evasion, which is pertinent for reform (Alstadsæter et al., 2022). Although government policies for tax design are directly impacted by macroeconomic factors, such as income, wealth, and consumption, taxing symbolises individualistic behaviour (Biddle et al., 2018). The macro framework also consists of monetary policies, which regulate economic activities through the money supply and lending by changing interest rates. However, effective banking policy facilitates the flow of economic resources, which can have expansionary or contractionary effects on individual industries in the tax avoidance behaviour of firms (Kong et al., 2021).

In addition to the monetary policy, one more critical component is the audit framework, which significantly impacts taxation and tax avoidance as measured through the audit quality (Gaaya et al., 2017). An important aspect of audit quality is the control mechanisms that can mitigate tax avoidance practices (Madah Marzuki & Syukur, 2021). Thus, previous accounting literature has emphasised the importance of firm characteristics, such

* Corresponding author. E-mail: iahmed@numl.edu.pk

as firm age, leverage, liquidity and firm size are also considered as control variables (Ginesti et al., 2020).

Tax law requires tax compliance, which in turn is primarily characterised by low tax-to-GDP ratios in developing countries such as Pakistan (Ahmed & Rider, 2013). Low tax compliance is due to a narrow tax base, the complexity of the law, and poor administration (Limberg & Seelkopf, 2022). In addition, tax evasion is more common due to weak institutional constraints. In contrast, developed countries have much more robust control systems that make it much easier to catch firms in abusive practices and have reliable tax detection (Besley & Persson, 2014). The tax authority in Pakistan still needs to meet tax targets and increase tax revenues due to legal loopholes and low tax morale (Ullah, 2021).

The effectiveness of finance in tackling global problems could be better, as it exacerbates the significant and growing financing gaps in developing countries efforts to achieve green, resilient and inclusive economic development (Desalegn & Tangl, 2022). Sustainable Development Goal (SDG) targets, e.g., to reduce global inequalities, achieve peaceful and inclusive societies, and strengthen global partnerships to ensure sufficient, equitable and accountable financing (van Niekerk, 2020).

This study fills a research gap in the context of tax avoidance and the case of Pakistan, where the institutional framework for tax evasion is crucial. Even Pakistan's audit framework is unique compared to other nations; it has its statutory criteria (Ashraf & Ghani, 2005). Therefore, this study provides a rational, empirical analysis of other tax avoidance investigation perspectives. In brief, the study aims to provide benefits in the form of increased compliance with tax laws, especially given its importance in increasing the tax-to-GDP ratio. This study seeks to answer the following questions: (Q1) Does the monetary policy influence the tax avoidance of public limited firms? (Q2) Does the audit quality affect the tax avoidance of non-financial firms? This case study seeks to examine the relationship between monetary policy and tax avoidance of public limited firms and determine the effect of audit quality on the tax avoidance of public limited firms.

1. Literature review

The general theory of tax avoidance has provided the basis and inspired further research into how firms avoid tax (Stiglitz, 1985). Guenther et al. (2017) clarified that managers ignore the law to increase firms' profitability and reduce their costs by reducing tax liabilities. Likewise, Hanlon et al. (2012) argue that it is relatively difficult to measure and confirm whether tax avoidance activities violate the law and the importance of examining the field of taxation from a multidisciplinary framework, such as accounting, finance, and economics.

1.1. Monetary policy and tax avoidance

The monetary policy and its interest rate are highly influential in tax avoidance. Lim (2012) clarified how firms

use debts as a tax shield to avoid taxation. The interest rates predominantly regulated by the central banks are highly affected by the tax shields through the debts. Similarly, there is a substitution effect between liability financing and tax avoidance. For instance, tax avoidance considered a non-debt tax shield, can further replace the tax shield through debts and reduce debt financing requirements (Porras, 2011). Remarkably, the higher debts and interests affect the constrained firms to rely primarily on self-funding through tax avoidance to increase their resources. Hsu and Lee (2016) examined models to overcome tax evasion and suggested a short-term interest rate. One of the other monetary policy tools is the long-term interest rate calculated through the ten-year bond rate (Kumar et al., 2020).

McGough et al. (2005) elaborated the use of long-term bond rates as a monetary policy instrument. There were some limitations in the short-term interest rates, such as its zero bound constraints. Due to the limitations got more pronounced after the global and financial crisis, the central banks also switched to the use of other policy tools which were unconventional such as the ten-year bond interest rates (Rudebusch, 2018).

The relationship between interest rates and tax evasion has previously been established (Hsu & Lee, 2016). The monetary policy also works along with the fiscal policy to influence the taxation (Kumhof et al., 2010). The decision-makers could build the perfect monetary policy for their unique economic requirements. The country's revenue goals could guide how the interest rates are set. To stop tax evasion, the central banks could change interest rates. However, the unwinding of inflation can be addressed with a successful fiscal strategy that is ideally created to investigate inflation (Dixit & Lambertini, 2001).

H1: The interest rates of monetary policy affect tax avoidance of the public limited firms.

1.2. Audit quality and tax avoidance

Audit quality is an essential monitoring mechanism of any organisation. Previous studies have documented the importance of audit quality, primarily how it oversees the organisation's work (Gaaya et al., 2017). Audit quality has a principal role in alleviating the tax avoidance practices of firms. The audit quality was measured by taking the dummy variable of 1 if the audit was done from one of the big four audit firms and 0 otherwise. The audit fee also represents the audit quality. Salehi et al. (2020) found a positive relationship between external audit fees and their measure of effective tax rates. The study argued that the firms with higher audit fees had a much better audit quality in terms of improved audit techniques, which also lowered tax avoidance. Hanlon et al. (2012) found that higher external audit fees caused more tax avoidance. Donohoe and Knechel (2014) found a significant positive relationship between audit fees and tax avoidance activity. However, previous studies show the importance of audit quality concerning corporate tax avoidance, and admittedly the findings could be more

apparent. The firm characteristics variables, e.g., size, liquidity, leverage, sales growth, asset growth, and turnover, are used to examine the impacts of tax avoidance. This study also considers these control variables in line with the previous empirical literature.

H2: The audit quality effects on tax avoidance of the public limited firms.

Figure 1 depicts our conceptual model, which connects monetary policy and audit quality to tax evasion (avoidance).

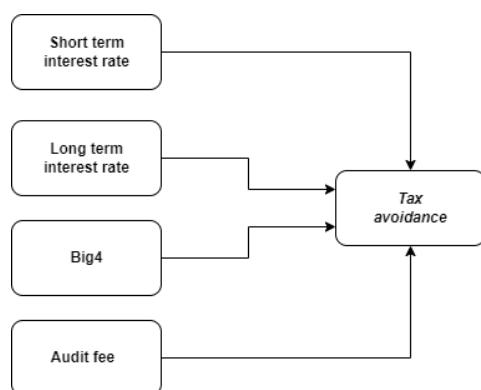


Figure 1. The influence of monetary policy and audit quality on tax evasion (source: authors' compilation)

2. Sample and methodologies

The sample includes 294 listed firms on the Pakistan Stock Exchange (PSX). The period is selected between 2011 to 2020. The financial data was collected from the annual reports and the State Bank of Pakistan website.

Appendix 1 describes the dependent and independent variables. For instance, tax avoidance (ACCTETR, CURTETR and CASHETR), monetary policy and audit quality regressors, e.g., (MONSHTI, MONLNG, BIGFOUR, AUDFEE), and along with control variables, e.g., (FIRMAGE, LEVG, LIQDTY and FSIZE). The descriptive statistics (Appendix 2) provide the data comprehension (Hair, 2010). There is a reasonable amount of stability between the mean and median, the standard variation, which reveals that data confirm the normality of distributions.

In the analysis, a panel regression method was preferred. The fixed effects model was validated based on the significant findings of the redundant fixed effects F and Chi-square tests which are significant at 5% level ($p < 0.05$) in all models. The Hausman specification Tests (Hausman et al., 1984) detect endogenous regressors (predictor variables) in the following regression model:

$$ETR_{i,t} = \beta_0 + \beta_1 MONSHTI_{i,t} + \beta_2 MONLNG_{i,t} + \beta_3 BIGFOUR_{i,t} + \beta_4 AUDFEE_{i,t} + \beta_5 LEVG_{i,t} + \beta_6 LIQDTY_{i,t} + \beta_7 FSIZE_{i,t} + \beta_8 FAGE_{i,t} + \varepsilon_{i,t}, \quad (1)$$

where: *ETR* – denotes tax avoidance; *MONSHTI* and *MONLNG* – explain short and long-term interest rates; *LVG*, *LIQDTY*, *FSIZE* and *FAGE* – controls leverage, liquidity, size and age of firms, respectively.

The monetary policy has its affects over the economy which can take a time frame, also referred to as the lag time (Havranek & Rusnak, 2013). This study also took the time lags of the monetary policy instruments for a period of five years. The tax avoidance behaviour of the firms can be better explained by using time lags of five years of the monetary policy instruments to produce the best forward-looking policy insights.

The reported F-statistics of the models (A, B and C) are significant ($p < 0.05$) reported in Tables 1, 2 and 3, indicating that not only are the model specifications appropriate, but the variables jointly influence the predictors.

3. Results

There are different measures of tax avoidance, e.g., accounting ETR (Hanlon & Heitzman, 2010). The lower value indicates an increase in tax avoidance (Ginesti et al., 2020). The results in Table 2 indicated that the monetary policy variables, such as MONSHTI which represents short-term interest rates, have a significant and positive relationship ($p < 0.05$) with the accounting ETR. This positive relationship can be explained by firms using the interest as a tax shield (Lim, 2012). The higher interest rates based upon the trade-offs could motivate the firms to rely less on debt and its interest as a tax shield, consequently, firms to avoid taxation.

Moreover, the MONLNG, the long-term interest rates as a part of the monetary policy tools, has a significant negative relationship ($p < 0.10$) with the accounting ETR. The negative relationship implies an increase in tax avoidance activity. The negative relationship is also supported by Hasan et al. (2014), who found that higher bond yields are linked to tax avoidance. The other independent variables, such as the external audit fee, affect tax avoidance negatively ($p < 0.05$). The results indicate that the higher the external audit fee level, the more tax avoidance activity there would be. However, the other audit quality proxy represented by BIGFOUR is insignificant with the accounting ETR. Although, the higher audit fees can provide incentives to external auditors who can facilitate tax avoidance for their client firms (Donohoe & Knechel, 2014). The firms' characteristics, which are control variables such as liquidity, leverage and firm age, have a significant positive relationship with the accounting ETR. The regression results provide empirical support for the two hypotheses of this study, H1 and H2. The variance inflation test (VIF) checks the multicollinearity and shows that there is no validity problem (each is less than 3 and low) (Hair, 2010).

The second proxy of tax avoidance is the current ETR (CURTETR), measured by current taxation divided by income before tax (Hanlon & Heitzman, 2010). The validated fixed effect regression model B (Table 2) shows the results and tests, which confirms the appropriateness. The monetary policy proxies, e.g., MONSHTI has a significantly positive relationship with the current ETR ($p < 0.05$). In contrast, the MONLNG has a significantly

Table 1. Fixed effects regression model A – Dependent variable ACCTETR (source: authors' compilation based on financial statements of public limited firms and State Bank of Pakistan (SBP))

Independent variable	Coefficient	Std. Error	T-statistics
Constant	0.406	0.106	3.819***
MONSHTI	0.015	0.005	2.760***
MONLNG	-0.079	0.045	-1.732*
BIGFOUR	0.007	0.019	0.368
AUDFEE	-0.048	0.012	-4.080***
LEVG	0.001	0.001	2.190**
LIQDTY	0.049	0.008	6.394***
FSIZE	0.000	0.000	-0.418
FAGE	0.001	0.001	2.025**
R-squared	0.267		
F-statistics	3.190***		
VIF	1.01		
Cross section F	2.647***		
Cross section χ^2	760.414***		
Hausman test	19.470**		

Note: ***: significant at 0.001 ($p < 0.001$), **: at 0.05 p-level, *: at 0.1 p-level.

negative relationship with the CURTETR ($p < 0.05$). The results are consistent with the findings of Kong et al. (2021) and imply that the monetary policies influence the tax avoidance behaviour of the firms. The proxy for audit quality, the external audit fee has a significant negative relationship with the current tax avoidance ($p < 0.05$). The results support the previous empirical evidence that a higher external audit fee of the audit firm facilitates tax avoidance (Donohoe & Knechel, 2014). The firm characteristics, i.e., leverage, liquidity and firm age, have a significant positive relationship with current ETR ($p < 0.05$). The regression model results with current ETR do provide empirical support for H1 and H2 hypotheses.

The third measure for tax avoidance activity is the cash ETR (CASHETR) measured by paid cash taxes divided by income before taxation (Hanlon & Heitzman, 2010). The cash ETR has an advantage that is not affected by the changes in the accounting accruals related to taxation. The results (Table 3) showed that the audit quality represented by the external audit fee has a significant negative relationship with the cash ETR ($p < 0.05$). This implies that the higher tends to be the external audit fee, the more tax avoidance activity would be carried out. The results support the prior literature findings (Donohoe & Knechel, 2014). The liquidity and firm age have a significant positive relationship with cash ETR ($p < 0.05$). The monetary policy proxies are insignificant. Their significance can be attributed to the limitations of cash ETR, that the cash ETR can have a high mismatch if the cash taxes are paid in distinct periods, and the tax deferral strategies can impact it. The regression results of cash ETR provide empirical support for the second hypothesis (H2).

Table 2. Fixed effects regression model B – Dependent variable CURTETR (source: authors' compilation based on financial statements of public limited firms and State Bank of Pakistan (SBP))

Independent variable	Coefficient	Std. Error	T-statistics
Constant	0.507	0.11	4.595***
MONSHTI	0.018	0.006	3.200***
MONLNG	-0.125	0.047	-2.656***
BIGFOUR	-0.001	0.02	-0.069
AUDFEE	-0.041	0.012	-3.403***
LEVG	0.001	0.001	2.358**
LIQDTY	0.044	0.008	5.579***
FSIZE	0.000	0.000	-0.514
FAGE	0.002	0.001	3.487***
R-squared	0.261		
F-statistics	3.081***		
VIF	1.1		
Cross section F	2.663***		
Cross section χ^2	764.447***		
Hausman test	18.656**		

Note: ***: significant at 0.001 ($p < 0.001$), **: at 0.05 p-level, *: at 0.1 p-level.

Table 3. Fixed effects regression model 3 – Dependent variable CASHETR (source: authors' compilation based on financial statements of public limited firms and State Bank of Pakistan (SBP))

Independent variable	Coefficient	Std. Error	T-statistics
Constant	0.152	0.124	1.221
MONSHTI	-0.003	0.006	-0.509
MONLNG	0.043	0.053	0.805
BIGFOUR	0.003	0.023	0.116
AUDFEE	-0.050	0.014	-3.640***
LEVG	0.000	0.000	-0.653
LIQDTY	0.056	0.009	6.256***
FSIZE	0.000	0.000	0.025
FAGE	0.002	0.001	4.083***
R-squared	0.244		
F-statistics	2.823***		
VIF	1.1		
Cross section F	2.375***		
Cross section χ^2	690.545***		
Hausman test	16.001**		

Note: ***: significant at 0.001 ($p < 0.001$), **: at 0.05 p-level, *: at 0.1 p-level.

Conclusions and implications

The present study was designed to determine the impacts of monetary policy and audit quality on corporate tax avoidance behaviour. The main objective of the study was to propose explanations for analysing how the effects of

short- and long-term interest rates and audit level values and fees determine the effective tax rates of public limited firms

This research was conducted with quantitative models using a panel regression method. The advantage of fixed effect is that it allows one to control all time-invariant omitted variables (Collischon & Eberl, 2020). A relatively large sample of firms was covered, and two hypotheses were tested between 2011 and 2020 in three alternative models to provide more generalisable and robust results and a better understanding of tax avoidance. We found that short and long-term interest rates significantly and adversely affect tax avoidance. In addition, the external audit fee affects tax avoidance negatively. Moreover, liquidity, leverage and firm age have a significant positive relationship with effective (accounting, current, cash) tax rates.

The paper has several theoretical contributions. This research examined the role of monetary policy stimulus. Moreover, audit quality factors by providing empirical evidence on tax avoidance behaviour. The findings of the study make it easier to understand that monetary policy and its short- and long-term interest rates have different effects. It is consistent with Lim (2012), who documented that firms form optimal leverage through trade-offs between the benefits and costs of debt. Debt and interest payment obligations can be used as a tax shield.

On the other hand, the higher cost of liability in the form of higher interest rates can expose firms to the risk of financial distress. As to progressive tax systems, fiscal and monetary policies that support sustainable development must be actively pursued (Popescu et al., 2019). Tax reforms in developing countries may benefit from “smart redistribution” technologies, which will increasingly provide financial flow transparency and allow taxpayers to comprehend how their tax contributions are spent (Bird & Zolt, 2008).

Audit quality, expressed in terms of external audit fees, was negatively related to tax avoidance rates. Higher external audit fees promote tax avoidance by client companies, as examined by Sikka and Hampton (2005). Accountancy and audit firms develop tax avoidance methods capable of depriving the state of large amounts of government tax revenue. Moreover, firm characteristics, which are also control variables, provide policymakers with insights into the fact that each firm has its differences and that it is essential to consider firm characteristics, such as firm age, leverage and size, when designing tax policies.

Limitations and future research

Finally, a few critical limitations need to be considered. First, this study has thoroughly examined the phenomenon of tax avoidance, with most corporate indicators used in line with the literature, despite the prevalence of ETRs, which cannot fully capture tax avoidance practices. More research is required to determine other proxies that capture the firms’ tax evasion. Second, researchers

should investigate further monetary policy instruments. For example, the target reserve requirement ratio (TRR) can affect corporate tax avoidance. Third, the study is limited to the sample size of Pakistani firms. What is now needed is a cross-national research comparison involving its institutional settings.

Acknowledgements

This work was supported by the János Bolyai Research Scholarship of the Hungarian Academy of Sciences.

Funding

This research was supported by the ÚNKP-22-5-DE-406 New National Excellence Program of the Ministry for Innovation and Technology from the source of the National Research, Development and Innovation Fund.

Author contributions

All authors contributed to the article and approved the submitted version.

Disclosure statement

Authors have no competing financial, professional, or personal interests from other parties.

References

- Ahmed, R. A., & Rider, M. (2013). Using microdata to estimate Pakistan’s tax gap by type of tax. *Public Finance Review*, 41(3), 334–359. <https://doi.org/10.1177/1091142113475697>
- Aivazian, V., Booth, L., & Cleary, S. (2003). Do emerging market firms follow different dividend policies from U.S. firms? *Journal of Financial Research*, 26(3), 371–387. <https://doi.org/10.1111/1475-6803.00064>
- Alstadsæter, A., Johannesen, N., le Guern Herry, S., & Zucman, G. (2022). Tax evasion and tax avoidance. *Journal of Public Economics*, 206, 104587. <https://doi.org/10.1016/j.jpubeco.2021.104587>
- Ashraf, J., & Ghani, W. I. (2005). Accounting development in Pakistan. *The International Journal of Accounting*, 40(2), 175–201. <https://doi.org/10.1016/j.intacc.2005.01.010>
- Atwood, T. J., Drake, M. S., Myers, J. N., & Myers, L. A. (2012). Home country tax system characteristics and corporate tax avoidance: International evidence. *The Accounting Review*, 87(6), 1831–1860. <https://doi.org/10.2308/ACCR-50222>
- Bates, T. W., Kahle, K. M., & Stulz, R. M. (2009). Why do U.S. firms hold so much more cash than they used to? *The Journal of Finance*, 64(5), 1985–2021. <https://doi.org/10.1111/J.1540-6261.2009.01492.X>
- Besley, T., & Persson, T. (2014). Why do developing countries tax so little? *Journal of Economic Perspectives*, 28(4), 99–120. <https://doi.org/10.1257/JEP.28.4.99>
- Biddle, N., Fels, K. M., & Sinning, M. (2018). Behavioral insights on business taxation: Evidence from two natural field experiments. *Journal of Behavioral and Experimental Finance*, 18, 30–49. <https://doi.org/10.1016/j.jbef.2018.01.004>

- Bird, R. M., & Zolt, E. M. (2008). Technology and taxation in developing countries: From hand to mouse. *National Tax Journal*, 61(4), 791–821. <https://doi.org/10.17310/ntj.2008.4S.02>
- Collischon, M., & Eberl, A. (2020). Let's talk about fixed effects: Let's talk about all the good things and the bad things. *Kolner Zeitschrift Fur Soziologie Und Sozialpsychologie*, 72(2), 289–299. <https://doi.org/10.1007/s11577-020-00699-8>
- Dang, C., (Frank) Li, Z., & Yang, C. (2018). Measuring firm size in empirical corporate finance. *Journal of Banking & Finance*, 86, 159–176. <https://doi.org/10.1016/j.jbankfin.2017.09.006>
- Desalegn, G., & Tangl, A. (2022). Enhancing green finance for inclusive green growth: A systematic approach. *Sustainability*, 14(12), 7416. <https://doi.org/10.3390/su14127416>
- Dixit, A., & Lambertini, L. (2001). Monetary–fiscal policy interactions and commitment versus discretion in a monetary union. *European Economic Review*, 45(4–6), 977–987. [https://doi.org/10.1016/S0014-2921\(01\)00134-9](https://doi.org/10.1016/S0014-2921(01)00134-9)
- Donohoe, M. P., & Knechel, R. W. (2014). Does corporate tax aggressiveness influence audit pricing? *Contemporary Accounting Research*, 31(1), 284–308. <https://doi.org/10.1111/1911-3846.12027>
- Dyregang, S. D., Hanlon, M., & Maydew, E. L. (2019). When does tax avoidance result in tax uncertainty? *The Accounting Review*, 94(2), 179–203. <https://doi.org/10.2308/accr-52198>
- Gaaya, S., Lakhali, N., & Lakhali, F. (2017). Does family ownership reduce corporate tax avoidance? The moderating effect of audit quality. *Managerial Auditing Journal*, 32(7), 731–744. <https://doi.org/10.1108/MAJ-02-2017-1530>
- Ginesti, G., Ballestra, L. V., & Macchioni, R. (2020). Exploring the impact of firm-level legality on tax avoidance. *European Management Review*, 17(2), 499–514. <https://doi.org/10.1111/emre.12382>
- Graham, J. R., & Tucker, A. L. (2006). Tax shelters and corporate debt policy. *Journal of Financial Economics*, 81(3), 563–594. <https://doi.org/10.1016/j.jfineco.2005.09.002>
- Guenther, D. A., Matsunaga, S. R., & Williams, B. M. (2017). Is tax avoidance related to firm risk? *The Accounting Review*, 92(1), 115–136. <https://doi.org/10.2308/accr-51408>
- Hair, J. F. (2010). *Multivariate data analysis*. Prentice Hall. https://doi.org/10.1007/978-3-642-04898-2_395
- Hanlon, M., & Heitzman, S. (2010). A review of tax research. *Journal of Accounting and Economics*, 50(2–3), 127–178. <https://doi.org/10.1016/j.jacc.2010.09.002>
- Hanlon, M., Krishnan, G. V., & Mills, L. F. (2012). Audit fees and book-tax differences. *Journal of the American Taxation Association*, 34(1), 55–86. <https://doi.org/10.2308/atax-10184>
- Hasan, I., Hoi, C. K. (Stan), Wu, Q., & Zhang, H. (2014). Beauty is in the eye of the beholder: The effect of corporate tax avoidance on the cost of bank loans. *Journal of Financial Economics*, 113(1), 109–130. <https://doi.org/10.1016/j.jfineco.2014.03.004>
- Hausman, J., Hall, B. H., & Griliches, Z. (1984). Econometric models for count data with an application to the Patents-R & D relationship. *Econometrica*, 52(4), 909. <https://doi.org/10.2307/1911191>
- Havranek, T., & Rusnak, M. (2013). Transmission lags of monetary policy: A meta-analysis. *International Journal of Central Banking*, 9(4), 39–76. <https://ideas.repec.org/a/ijc/ijcjou/y2013q4a2.html>
- Hsu, Y.-C., & Lee, C.-C. (2016). Factors affecting tax evasion: Do interest rate and regional effects matter? *The Singapore Economic Review*, 61(04), 1550026. <https://doi.org/10.1142/S0217590815500265>
- Kong, X., Si, D. K., Li, H., & Kong, D. (2021). Does access to credit reduce SMEs' tax avoidance? Evidence from a regression discontinuity design. *Financial Innovation*, 7(1), 1–23. <https://doi.org/10.1186/s40854-021-00235-3>
- Kumar, V., Acharya, S., & Ho, L. T. H. (2020). Does monetary policy influence the profitability of banks in New Zealand? *International Journal of Financial Studies*, 8(2), 35. <https://doi.org/10.3390/ijfs8020035>
- Kumhof, M., Nunes, R., & Yakadina, I. (2010). Simple monetary rules under fiscal dominance. *Journal of Money, Credit and Banking*, 42(1), 63–92. <https://doi.org/10.1111/j.1538-4616.2009.00278.x>
- Lim, Y. (2012). Tax avoidance and underleverage puzzle: Korean evidence. *Review of Quantitative Finance and Accounting*, 39(3), 333–360. <https://doi.org/10.1007/s11156-011-0258-8>
- Limberg, J., & Seelkopf, L. (2022). The historical origins of wealth taxation. *Journal of European Public Policy*, 29(5), 670–688. <https://doi.org/10.1080/13501763.2021.1992486>
- Madah Marzuki, M., & Syukur, M. S. (2021). The effect of audit fees, audit quality and board ownership on tax aggressiveness: evidence from Thailand. *Asian Review of Accounting*, 29(5), 617–636. <https://doi.org/10.1108/ARA-11-2020-0179>
- McGough, B., Rudebusch, G. D., & Williams, J. C. (2005). Using a long-term interest rate as the monetary policy instrument. *Journal of Monetary Economics*, 52(5), 855–879. <https://doi.org/10.1016/j.jmoneco.2005.07.011>
- Oats, L., & Tuck, P. (2019). Corporate tax avoidance: is tax transparency the solution? *Accounting and Business Research*, 49(5), 565–583. <https://doi.org/10.1080/00014788.2019.1611726>
- Popescu, M. E., Militaru, E., Stanila, L., Vasilescu, M. D., & Cristescu, A. (2019). Flat-rate versus progressive taxation? An impact evaluation study for the case of Romania. *Sustainability*, 11(22), 6405. <https://doi.org/10.3390/su11226405>
- Porrás, E. R. (2011). The optimal capital structure. In *The cost of capital* (pp. 193–224). Palgrave Macmillan. https://doi.org/10.1057/9780230297678_7
- Rudebusch, G. D. (2018). A review of the fed's unconventional monetary policy. *FRBSF Economic Letter*. <https://ideas.repec.org/a/fip/fedfel/00178.html>
- Salehi, M., Tarighi, H., & Shahri, T. A. (2020). The effect of auditor characteristics on tax avoidance of Iranian companies. *Journal of Asian Business and Economic Studies*, 27(2), 119–134. <https://doi.org/10.1108/JABES-11-2018-0100>
- Sattar, U., Javeed, S. A., & Latief, R. (2020). How audit quality affects the firm performance with the moderating role of the product market competition: Empirical evidence from Pakistani manufacturing firms. *Sustainability*, 12(10), 4153. <https://doi.org/10.3390/su12104153>
- Sikka, P., & Hampton, M. P. (2005). The role of accountancy firms in tax avoidance: Some evidence and issues. *Accounting Forum*, 29(3), 325–343. <https://doi.org/10.1016/j.accfor.2005.03.008>
- Stiglitz, J. E. (1985). The general theory of tax avoidance. *National Tax Journal*, 38(3), 325–337. <https://doi.org/10.1086/NTJ41792029>
- Ullah, R. R. (2021). Tax reforms in Pakistan: Historic and critical view. Islamabad. *The Pakistan Development Review*, 60(3), 385–388. <https://ideas.repec.org/a/pid/journal/v60y-2021i3p385-388.html>

- van Niekerk, A. (2020). Inclusive economic sustainability: SDGs and global inequality. *Sustainability*, 12(13), 5427. <https://doi.org/10.3390/su12135427>
- Verbeken, D., Haslehner, W., & Pantazatou, K. (2022). *Assessment of recent anti-tax avoidance and evasion measures (ATAD & DAC 6)*. European Parliament.

Appendix 1

Dependent variables	Proxies and descriptions
Tax Avoidance*	
Effective tax rate	1. Accounting ETR = taxation divided by accounting income before tax (ACCETR) (Ginesti et al., 2020). 2. Current ETR = taxation of current period divided by accounting income before tax (CURTETR) (Hanlon & Heitzman, 2010). 3. Cash ETR = paid cash taxation divided by accounting income before tax (CASHETR) (Hanlon & Heitzman, 2010).
Regressor variables	Proxies
Monetary Policy**	
MONSHTI (Short-term interest rates)	Policy rates of the central banks (short-term interest rate) are updated bimonthly and annually averaged (Kumar et al., 2020).
MONLNG (Long-term interest rates)	The long-term bonds, in the case of Pakistan, the ten-year Pakistan investment bonds (PIBS), are taken (Kumar et al., 2020).
Audit Quality*	
BIGFOUR	It takes the value of 1 if the audit is done by one of the Big 4 firms and 0 otherwise (Gaaya et al., 2017).
AUDFEE (external audit fee)	It is measured by dividing the statutory audit fees by the number of sales (Sattar et al., 2020).
Control variables	
LEVG (Leverage)	It is calculated by dividing the total debt by the total assets (Bates et al., 2009).
LIQDTY (Cash liquidity)	The current ratio is current assets to current liabilities (Aivazian et al., 2003).
FSIZE (Firm size)	It is measured using the natural logarithm of the firm's total assets (Dang et al., 2018).
FAGE	The firm has aged since the year of its incorporation (Ginesti et al., 2020).

Note: * Financial statements of public limited firms, ** State Bank of Pakistan (SBP).

Appendix 2

Variable	Mean	S. D.	Max.	Med.	Min.
ACCTETR*	0.243	0.232	1.000	0.229	0.000
CURTETR*	0.224	0.255	1.000	0.171	0.000
CASHETR*	0.293	0.296	1.000	0.221	0.000
MONSHTI**	9.100	2.450	13.250	9.344	5.750
MONLNG**	10.862	1.920	13.366	9.801	8.086
BIGFOUR*	0.510	0.500	1.000	1.000	0.000
AUDFEE*	0.002	0.013	0.417	0.000	0.000
LEVG*	0.590	0.738	23.406	0.542	0.000
LIQDTY*	2.053	8.904	257.929	1.119	0.000
FSIZE*	8.064	1.402	16.048	7.907	0.399
FAGE*	39.165	16.970	78.000	36.000	0.000

Note: * Financial statements of public limited firms, ** State Bank of Pakistan (SBP).