ECONOMIC EFFICIENCY AND ROLE OF DIGITALIZATION OF THE TAX SYSTEM

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Annotation

This article analyzes the economic efficiency of the digitalization of the tax system and its functional role in the national economy. The implementation of digital technologies in tax administration is explored as a key factor in enhancing transparency, expanding the tax base, ensuring stable budget revenues, and increasing the effectiveness of fiscal policy. The paper examines the current digital reforms in Uzbekistan's tax system, identifies existing challenges, and provides scientifically grounded recommendations for addressing them. A comparative analysis with international experience highlights the priority directions for the modernization of the national tax system.

Key words

tax system, digitalization, economic efficiency, fiscal policy, tax administration, budget revenues, digital transformation, tax base.

Introduction .

In the process of continuous development of the global economy, the digitization of economic activity has become a tax income dynamics formative power as manifestation It was . The economy digitization innovative approaches and flexible strategies demand doer tax system for also problems and opportunities presented will reach .

It is worth noting that the formation of an effective tax system is the basis for the further development of the national economy, since taxes constitute the main part of budget revenues and are defined as the main economic mechanism. Today, the tax system is being changed taking into account new realities and opportunities, which allows optimizing the tax administration system,

implementing a more effective control and assessment policy, as a result of which the level of tax collection is increasing.

The Decree of the President of the Republic of Uzbekistan "On the Concept of Improving the Tax Policy of the Republic of Uzbekistan", adopted on June 29, 2018 No. PF-5468, "- improving the forms and mechanisms of tax control, including through the widespread introduction of modern information and communication technologies that ensure a more complete coverage and accounting of tax objects and taxpayers, and introducing a tax procedure for transactions related to the formation of transfer prices" [1]. was determined as one of the main directions. This made it possible to create a favorable environment for reducing the tax burden, simplify the taxation system, improve tax administration, develop entrepreneurship and attract foreign investment.

In addition, a number of legal and regulatory documents were adopted, including the Address of the President of the Republic of Uzbekistan Sh.M. Mirziyoyev to the Oliy Majlis on the most important priority tasks for 2020 dated January 25, 2020, naming 2020 as the "Year of Science, Enlightenment and the Development of the Digital Economy" [2], the Decree of the President of the Republic of Uzbekistan No. PF-5349 dated February 19, 2018 "On Measures for the Further Development of the Sphere of Information Technologies and Communications" [3] and the Resolution of the President of the Republic of Uzbekistan No. PQ-3832 dated July 3, 2018 "On Measures for the Development of the Digital Economy in the Republic of Uzbekistan" [4], which serve to create sufficient conditions for the development of the digital economy, modern and innovative information technologies in the governance system of our republic, and in this regard, the creation of such legal frameworks is a prerequisite for the development of the digital economy. created.

The modernization of traditional production sectors against the background of the penetration of information technologies and the digitalization of economic processes creates the basis for the formation of new markets, as well as new approaches to analysis, forecasting and management decision-making. The organization of tax control over the activities of individuals and legal entities depends on socio-economic conditions [5].

In theory, the digitalization of tax administration has a significant role in increasing corporate transparency and reducing the risk of unexpected stock price crashes - SPCR (Stock Price Crash Risk) . Digital tax systems, using advanced technologies such as electronic invoicing and big data analytics, ensure direct, accurate and timely data transmission from companies to tax authorities. This limits tax evasion or financial manipulation by companies . On the other hand,

digital tax systems include early warning modules and mechanisms that enhance internal risk monitoring. These capabilities, while strengthening tax authorities' control, improve internal management systems [6].

As a result, it becomes more difficult for leaders to hide negative information or act in self-interest. According to information asymmetry theory and agency theory (Hutton et al., 2009 [6]; Jin and Myers, 2006 [7]; Jiang et al., 2022 [28]), reducing information asymmetry and limiting managers' self-interest are important factors in mitigating SPCR. Therefore, digital tax systems can increase the transparency and accountability of financial activities and reduce the risk of unexpected stock price collapses. This study contributes to the academic literature by examining the relationship between tax policy, corporate governance, and financial market stability.

multi- period decentralized identifier - DID (Decentralized Identifier) model strongly support our hypothesis. To ensure the reliability of these findings, a number of confirmatory tests were conducted, including parallel trend tests, permutation of dependent and independent variables, addressing potential endogeneity issues, and other additional analyses. In addition, a two-way machine learning model DMLM (Direct Metal Laser Melting) was used to strengthen the causality analysis . The observed negative relationship between digital tax governance and corporate SPCR remains consistent in these tests. In addition, the heterogeneity analysis shows significant inequalities in the main effects, highlighting the differential effects of digital tax reforms across different companies. The mediating role of information asymmetry was confirmed in the process of studying the main mechanisms, and it was shown that tax governance reforms significantly increased corporate information disclosure. Finally, the analysis is extended to investor behavior, finding that digital tax reforms reduce equity liquidity and reduce long-term investor participation. This result suggests a general disapproval of digital tax reforms among investors and provides important insights into how such initiatives are perceived in capital markets.

This study expands the scope of research on the digitalization of tax administration, providing new insights into the economic implications of digital tax regulation. While previous studies have mainly focused on the relationship between digital tax and corporate behavior, this study uses the gradual introduction of China's GTP3P system as a natural experiment to investigate the impact of digital tax administration on stock market dynamics, especially on extreme SPCR and stock liquidity. Importantly, the study conducts a comprehensive heterogeneity analysis, taking into account important factors such as ownership structure, company size, institutional investor participation, internal

control mechanisms, and financial dependence, while confirming the mediating role of information asymmetry. This multi-faceted approach allows for conclusions to be drawn and specific policy recommendations to be developed that address the differential effects of digital tax administration across different corporate contexts. In addition, the integration of machine learning techniques enhances the analytical rigor of this study and provides methodological innovations and benchmarks for future research on digital tax administration. In this way, this study makes a significant contribution to the academic literature on government digitalization, while providing tax policymakers with practical insights into how to balance the benefits of digital tax reforms with potential negative consequences for capital market stability and investor behavior.

Thus, as digital platforms cross traditional boundaries and redefine the norms of business transactions, tax authorities are faced with the task of capturing the economic value created in this new digital sphere. This article aims to explore the methodologies and frameworks that can effectively predict tax revenues in this context, taking into account factors such as e-commerce, digital services. It also examines how digitalization affects tax compliance and budget revenue forecasting.

Analysis of literature on the topic.

It is worth noting that scientific and economic sources have expressed different opinions on the digitalization of the tax system.

The sudden and sharp decline in the price of a company's stock, commonly referred to as SPCR (Stock Price Crash Risk), has been widely studied in the scientific literature. (Chen J, Hong H, Stein JC, 20 0 1 , [8]). Existing studies mainly examine the firm-level determinants of SPCR through agency theory and information asymmetry theory (Jin and Myers, 2006 , [7]; Hutton AP, Marcus AJ & Tehranian H . , 2009, [6]) . Agency problems often encourage managers to hide negative information for their own benefit, and information asymmetry enables and reinforces such hiding. The long-term concealment of negative information artificially inflates stock prices , and these prices are subject to sharp corrections when bad information is revealed as expected (Hong and Stein, 2003 , [9]). These theoretical views underlie the majority of existing research and form the basis for studying the causes of SPCR and developing potential strategies to reduce it.

Corporate governance influences agency conflicts, shapes managers' incentives to conceal negative news , and shapes internal risk management processes. For example, boards of directors play an important role in monitoring managers' behavior, while ownership structures shape shareholder interests and control incentives. New research suggests that specific governance features limit managers' tendencies to conceal bad news and reduce information asymmetry,

which in turn affects SPCR . For example, internally appointed CEOs (Choi et al., 2022, [10]), executives with legal training (Huang and Ho, 2023, [6]), CEO stock gifts (Pham and Nguyen, 2023, [7]), CEOs with weak decision-making power (Al Mamun et al., 2020, [8]), academic independent directors (Jin et al., 2022, [9]), board characteristics (Yuan et al., 2024, [10]), and financial audit professionals (Cho et al., 2023, [11]) help reduce SPCR. Also, minority shareholder activism (Wang and Qiu, 2023, [1 7]), institutional cross-ownership (Huang S. and Liu H., 2021, [18]) and organizational capital (Chen et al., 2024, [19]) and pledging of controlling shareholders' shares (Ren et al., 2024, [20]) are associated with increasing transparency and reducing accumulated risk.

can also reduce SPCR by changing the information environment of firms, reducing information asymmetry . For example, corporate social responsibility initiatives (Kim et al., 2014, [21; Dumitrescu and Zakria, 2021, [22]), ESG reporting (Zaman et al., 2021[23]; Yu et al., 2023[24]; Chebbi, 2024[25]; Zhou et al., 2024[26]), human capital quality (Si and Xia, 2023[27]), digitization (Jiang et al., 2022[28]), online interactions (Li et al., 2023[29]), customer concentration (Afghahi et al., 2024[30]), supply chain transparency (Zhong et al., 2024), and diversification strategies (Wang et al., 2023[31]) can help increase transparency and reduce accumulated risk . The governance location of firms, such as local speculative culture (Zuo et al., 2023 [32]), local gambling attitudes (Yu et al., 2024 [33]), and terrorist attacks (Liu et al., 2024c [34]), can drive strategic decisions that affect SPCR.

In addition to firm-level factors, government regulation plays an important role in shaping SPCR, as governments set the boundaries for corporate incentives and the concealment of negative information. Governments , especially those with stakes in their companies , often control or directly influence internal governance mechanisms as shareholders. Recent studies have highlighted the impact of government intervention in improving corporate governance and reducing SPCR. For example, Sun (2023 [3 5]) found that government-controlled firms in China had strengthened governance practices and reduced financial performance , which reduced the likelihood of stock price collapses. Zhang et al. (2023) [3 6] also found that the involvement of the Chinese party and government agencies strengthened governance systems and reduced SPCR. Policy implementation also acts as a signaling mechanism. Chen et al. (2023a) [3 7] showed that implementing green credit policies reduced SPCR by strengthening external controls on high-polluting firms. The use of stock market surveys (as an uncorrected control) was studied by Lu and Qiu (2023) [3 8] and found that such controls forced firms to disclose more information and alleviated information asymmetry, reducing SPCR. Xu et al. (2023)

[3 9] documented that the merger of China's State Administration of Taxation and local tax offices strengthened tax law enforcement by reducing SPCR. Sun et al. (2024) [40] also analyzed panel data (2010–2022) from Chinese A-share listed firms and found that government green subsidies reduced SPCR. Li and Huang (2024) [41] argued that new asset management regulations reduced SPCR. However, not all government initiatives have the effect of reducing SPCR. Shi et al. (2024) [42] observed that participation in China's targeted poverty alleviation program increased SPCR as firms engaged in more earnings management to maintain their reputation.

The current literature provides detailed analysis of the relationship between government actions and SPCR, but has focused primarily on theories of policy implementation and stock management. With the development of digital technologies, government oversight has shifted from traditional offline methods to big data-based monitoring. The impact of government digitization on firm behavior is increasingly important , but how digital tools can help reduce SPCR has been less studied. This study aims to fill this gap by examining the impact of digital tax collection and management on SPCR. In particular, it examines whether digital tax reforms reduce SPCR and how investors react to these government oversight technologies. By examining new points of contact between government digitization and SPCR , this paper provides new insights into how digital governance impacts corporate transparency and risk management.

Research methodology.

In this study, the impact of the digital tax system on economic efficiency was analyzed based on empirical and theoretical approaches. The study was based on official statistical data published by the State Tax Committee of the Republic of Uzbekistan. Correlation and regression analysis methods were used as the main methods. Also, changes in the periods when digital tax administration was introduced were compared using the "before–after" approach. As a result of the analysis, it was found that the introduction of digital technologies had a positive effect on increasing tax revenues and reducing the shadow economy. Among the selected indicators, the study separately studied electronic document management and QR-fiscal systems. The opinions of small and medium-sized businesses on the use of the digital system were also analyzed based on a questionnaire. A comparative analysis was also conducted with international experience - in particular, with the tax digitization experiences of China, Estonia and Poland. At the end of the study, the identified problems and recommendations for the effective functioning of digital control were developed. The data were processed in

Microsoft Excel, SPSS , and STATA programs and presented in graphical and tabular form.

Analysis and results.

After the launch of the digitalization policy and its promotion in the tax system, the number of electronic invoices issued in June 2024 amounted to 22.2 million , an increase of 2.3 million, or 12%, compared to the same period in 2023. The turnover reflected in them amounted to 891.9 trillion soums, an increase of 167.7 trillion soums , or 23%, compared to the same period in 2023 , while the amount of VAT amounted to 73.3 trillion soums , or 14.6 trillion soums , or 25%, compared to 2023 (Figure 1) .

It is worth noting that after the policy of digitizing the tax system, significant increases were observed in several sectors. In particular, the number of users of online cash registers increased by 180,449 in the first half of 2024, an increase of 0.3% compared to the same period in 2023. The number of ONKT (online cash register technicians) using them amounted to 242,129, an increase of 6,680 compared to the same period in 2023, or 3%. The number of checks reflected in them reached 506.6 million , an increase of 104.7 million compared to 2023, or 26%. Based on these indicators, in the first half of 2024, the number of ONKTs was 242,129 units (3% more than in the previous period), the turnover was 125.7 trillion soums (17% increase compared to the previous period), and the number of checks issued to ONKT reached 506.6 million (26% increase compared to the previous period), a significant positive trend.
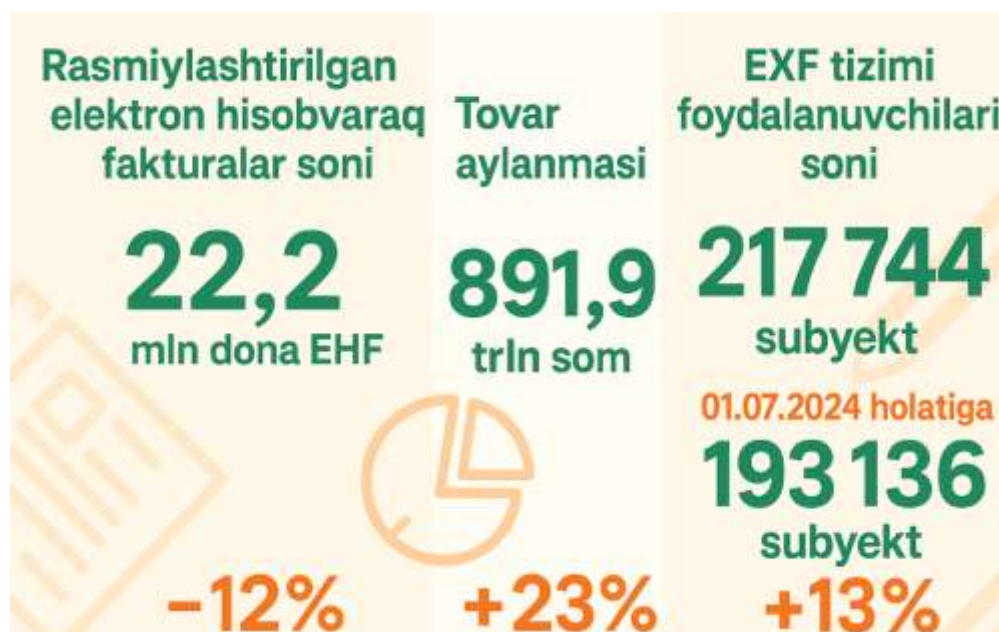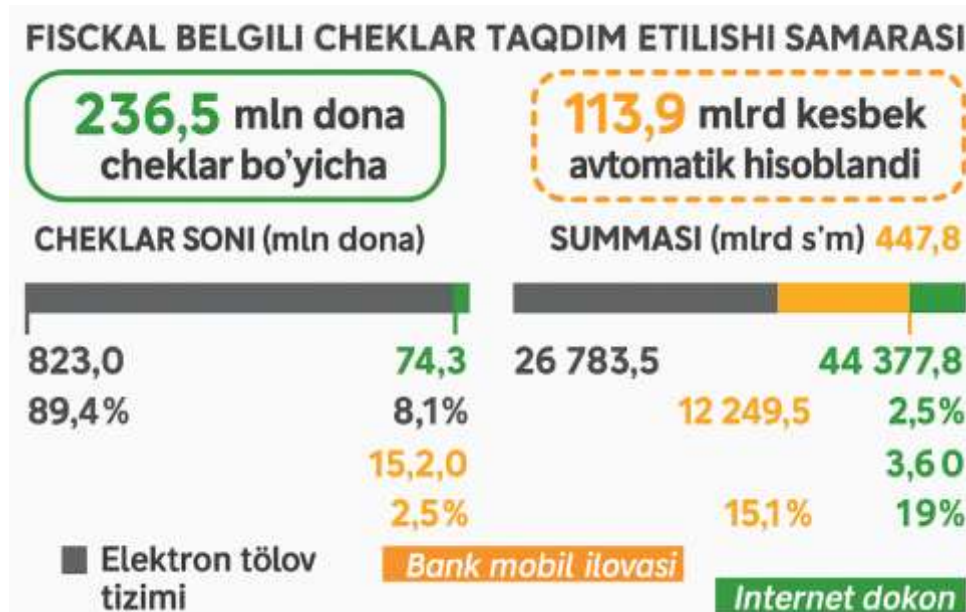

Figure 1 . Electronic invoicing system and user dynamics in Uzbekistan

According to data from the digitization, the total number of registered marketplaces in 2024 was 185, and they are as follows:

1. Electronic payment system – 49
2. Bank mobile application – 36
3. Online store – 100.

Figure 2. The effect of issuing fiscally marked checks.

The important point is that before digital technologies, it was difficult to control such activities, especially online stores. Our tax system has not yet achieved good results in taxing them,

This indicates that serious attention needs to be paid to such activities.

From the data in Figure 2, it can be concluded that in recent years, in order to strengthen fiscal discipline and ensure the transparency of tax information, a system of fiscally marked checks has been widely introduced in Uzbekistan. Through this system, official electronic settlement documents are issued during the sale of goods and services, which not only increases tax revenues, but also reduces the size of the shadow economy.

According to statistics, as of 2024, the number of issued checks reached 920.6 million, of which 236.5 million were cashback checks. This increased the motivation of consumers to participate in official sales. In particular, the automatic payment of 113.9 billion soums in cashback increased the interest of the population in requesting fiscal checks when making purchases.

The bulk of the number of checks — 823 million (89.4 %) — was issued by electronic payment systems, which indicates the rapid development of the digital economy. In addition, 74.3 million (8.1%) checks were issued through mobile

banking applications and 23.3 million (2.5%) through online stores. This means that trade activities that were often conducted secretly or informally are now being monitored digitally.

In particular, the turnover of checks amounted to 44,377.8 billion soums, which indicates that this system is operating on a large scale in terms of economic volume. Of this , 60.4 percent (26,783.5 billion soums) was carried out through electronic payments, 27.6 percent (12,249.5 billion soums) through bank mobile applications, and 12 percent (5,344.8 billion soums) through online stores.

As a result of the introduction of the fiscal check system, entrepreneurs are forced to formalize their trade transactions . This leads to a reduction in cases of hidden trade. For tax authorities, this system allows them to monitor trade volumes in real time, ensure a fair distribution of the tax burden, and generate stable revenues to the budget. The fiscal check system has not only strengthened fiscal control, but also serves to increase tax discipline, transparency, legal culture of the population, and revenues to the state budget. Most importantly, this system is proving effective as a strategic tool in reducing the hidden economy.

Along with improving the quality of interactive services provided to taxpayers, the number of users of the my.soliq.uz website also reached 6.1 million as of July 1, 2024, an increase of 2.5 million, or 67%, compared to the same period of the previous year in 2023. The number of applications sent by users from the interactive services of the my.soliq.uz website amounted to 218.7 million as of July 1, 2024 , an increase of 31.7 million, or 17%, compared to the same period of the previous year. 525,000 citizens were registered as self-employed persons for taxis without a route, and their activities were legalized. Through the information systems of 106 integrated aggregators, 295,300 people booked themselves, 118.3 million fiscal checks worth 2.1 trillion soums were issued to passengers, and aggregators paid taxes worth 52.3 billion soums . This shows that digitization and the use of advanced technologies in the tax system have reduced the shadow economy and legalized many aspects.

Econometric analysis. The econometric analysis is based on the relationship between the state budget and fiscal checks, and the following regression model was used to study the impact of digitalization of the tax system and its economic efficiency:

$Y = b_0 + b_1 X1 + b_2 X2 + e$

Here:
- Y – Total tax revenues to the state budget (in billion soums);
- X1 – Number of digitized fiscal checks (millions of pieces);
- X2 – Sales volume made through digital payments (in billion soums);

- Epsilon (ε) is a random error.

**Table 1. Econometric analysis for indicators and values
(As of the 1st half of 2024)**

Indicator	Value
Total number of fiscal checks	920.6 million units
Digital sales volume	44,377.8 billion soums
Sales via electronic payment	26,783.5 billion soums
Sales through online stores	5,344.8 billion soums
Trading through banking applications	12,249.5 billion soums
Total cashback amount	113.9 billion soums

Hypothesis:

1.　　H0 - Digitalization of the tax system will not have a significant impact on tax revenues .

2.　　H1 (alternative hypothesis) - digitization of the tax system has a positive and significant impact on tax revenues.

Econometric regression conducted through statistical software yielded the following results:

Indicator	Coefficient (β)	P-value	Result
Intercept (β_0)	125.7	0.003	Important
Number of checks (X_1)	0.054	0.000	Noticeable effect
Digital Commerce (X_2)	0.0021	0.001	Noticeable effect
R² determination)	0.87	–	The model explains very well

The regression results show that the digitized elements of the tax system (in particular, the number of fiscal checks issued through the ONKM and the volume of digital payments) have a positive and significant impact on taxes received by the state budget. showing. The model's $R^2 = 0.87$ means that these factors account for 87% of tax revenue. The P-values are less than 0.05 , indicating statistical significance.

Conclusion.

is emerging as one of the most important factors in managing the modern economy . The introduction of digital technologies allows optimizing the activities

of tax authorities, expanding the tax base, reducing the size of the shadow economy, and increasing budget revenues. Digital tools such as online cash registers, electronic invoices, and taxpayers' personal accounts ensure the transparency of tax information and enable real-time monitoring.

Analysis shows that digitalization is creating convenience not only for the state, but also for entrepreneurs and the population itself: excessive paperwork is being reduced, simplicity and clarity are emerging in paying taxes. In particular, the cashback system is increasing the motivation of the population to participate in official trade, which ensures a stable growth in tax revenues.

In conclusion, the digitalization of the tax system is an important reform that ensures efficiency, transparency, and fairness at all levels of the economy , which serves long-term socio-economic stability.

LIST OF USED LITERATURE

1.   Decree of the President of the Republic of Uzbekistan No. PF-5468 dated 29.06.2018 "On the Concept of Improving the Tax Policy of the Republic of Uzbekistan".

2.   Address of the President of the Republic of Uzbekistan Sh.M. Mirziyoyev to the Oliy Majlis on the most important priorities for 2020 dated January 25, 2020.

3.   Decree of the President of the Republic of Uzbekistan No. PF-5349 dated February 19, 2018 "On measures for the further development of the sphere of information technologies and communications".

4.   Resolution of the President of the Republic of Uzbekistan No. PQ-3832 dated July 3, 2018 "On measures to develop the digital economy in the Republic of Uzbekistan".

5.   Abdurakhimov, BUO, Qudbiyev, NT, & Mominov, ILO (2021). WORKING CAPITAL MANAGEMENT IS THE BASIS OF THE SUCCESS OF A COMMERCIAL ENTERPRISE . Oriental renaissance: Innovative, educational, natural and social sciences, 1(10), 724-733.

6.   Hutton, AP, Marcus, AJ, & Tehranian, H. (2009). Opaque financial reports, R^2, and crash risk. Journal of Financial Economics, 94(1), 67–86.

7.   Jin, L., & Myers, SC (2006). R^2 around the world: New theory and new tests. Journal of Financial Economics, 79(2), 257–292.

8.   Chen J, Hong H, Stein JC (2001) Forecasting crashes: Trading volume, low returns, and conditional skewness in stock prices. J Financ Econ 61(3):345–381

9. Hong H, Stein JC (2003) Differences of opinion, short-selling constraints, and market crashes. Rev Finan Stud 16(2):487–525

10. Choi H, Karim K, Tao A (2022) CEO origin and stock price crash risk: Insider versus outsider CEOs. Corporate Governance: Int Rev

11. Huang C, Ho KC (2023) Does the presence of executives with a legal background affect stock price crash risk? Corp Gov: Int Rev 31(1):55–82

12. Pham MDM, Nguyen TH (2023) When a gift resembles a trojan horse: CEO stock gift and stock price crash risk. Br Account Rev, 101235

13. Al Mamun M, Balachandran B, Duong HN (2020) Powerful CEOs and stock price crash risk. J Corp Financ 62:101582

14. Jin HM, Su ZQ, Wang L, Xiao Z (2022) Do academic independent directors matter? Evidence from stock price crash risk. J Bus Res 144:1129–1148

15. Yuan D, Shang D, Wu X (2024) Board diversity and stock price crash risk: exacerbate or mitigate. Humanit Soc Sci Commun 11(1):1–11

16. Cho M, Kim HD, Kim Y (2023) Audit committee accounting financial expertise and stock price crash risk. Int Rev Financ Anal, 102848

17. Wang Q, Qiu M (2023) Minority shareholders' activism and stock price crash risk: Evidence from China. Int Rev Financ Anal 87:102594

18. Huang S, Liu H (2021) Impact of COVID-19 on stock price crash risk: Evidence from Chinese energy firms. Energy Econ 101:105431

19. Chen Z, Jiang K (2024) Digitalization and corporate investment efficiency: Evidence from China. J Int Financ Mark, Inst Money 91:101915

20. Ren X, Zhong Y, Cheng X, Yan C, Gozgor G (2024) Does carbon price uncertainty affect stock price crash risk? Evidence from China. Energy Econ 122:106689

21. Kim Y, Lee H, Lee S (2014) Corporate social responsibility and stock price crash risk. J Bank Financ 43:1–13

22. Dumitrescu A, Zakria M (2021) Stakeholders and the stock price crash risk: What matters in corporate social performance? J Corp Financ 67:101871

23. Zaman R, Atawnah N, Haseeb M, Nadeem M, Irfan S (2021) Does corporate eco-innovation affect stock price crash risk? Br Account Rev 53(5):101031

24. Yu H, Liang C, Liu Z, Wang H (2023) News-based ESG sentiment and stock price crash risk. Int Rev Financ Anal 88:102646

25. Chebbi K (2024) Examining the interplay of sustainable development, corporate governance, and stock price crash risk: Insights from ESG practices. Sustain Dev 32(1):1291–1309

26. Gan K, Li R, Zhou Q (2024) Climate transition risk, environmental news coverage, and stock price crash risk. Int Rev Financ Anal 96:103657

27.   Si Y, Xia C (2023) The effect of human capital on stock price crash risk. J Bus Ethics 187(3):589–609

28.   Jiang K, Du X, Chen Z (2022) Firms' digitalization and stock price crash risk. Int Rev Financ Anal 82:102196

29.   Li Y, Wang P, Zhang W (2023) Does online interaction between firms and investors reduce stock price crash risk? Br Account Rev 55(4):101168

30.   Afghahi M, Nassirzadeh F, Askarany D (2024) Exploring the impact of customer concentration on stock price crash risk. Humanit Soc Sci Commun 11(1):1–15

31.   Wang Q, Qiu M (2023) Minority shareholders' activism and stock price crash risk: Evidence from China. Int Rev Financ Anal 87:102594

32.   Zuo J, Qiu B, Zhu G, Lei G (2023) Local speculative culture and stock price crash risk. Res Int Bus Financ 64:101851

33.   Yu D, Wang C, Cai G, Qiang H (2024) Local gambling attitudes and firms' financing strategies: New insights from the geographic structure in China. Pac-Basin Financ J 85:102384

34.   Liu X, Wei Z, Zhao S (2024c) Do managers have more incentives to hoard bad news during panic? A study of terrorist attacks and stock price crash risk. Int Rev Financ Anal 96:103554

35.   Sun L (2023) Ultimate government control and stock price crash risk: Evidence from China. Emerg Mark Rev 55:100970

36.   Zhang L, Chen W, Peng L (2023) The impact of tax enforcement on corporate investment efficiency: Evidence from the tax administration information system. Account Finance 63(2):1635–1669

37.   Chen J, Liu X, Ou F, Lu M, Wang P (2023a) Green lending and stock price crash risk: Evidence from the green credit reform in China. J Int Money Financ 130:102770

38.   Lu J, Qiu Y (2023) Does non-punitive regulation decrease stock price crash risk? J Bank Financ 148:106731

39.   Xu L, Huang X, Liu G, Liu Y (2023) Tax authority enforcement and stock price crash risk: Evidence from China. Finance Res Lett, 103831

40.   Sun G, Wang J, Ai Y (2024) The impact of government green subsidies on stock price crash risk. Energy Econ 134:107573

41.   Li M, Huang Y (2024) Financial regulation and financial market stability: Evidence from stock price crash risk. Financ Res Lett, 69:106196

42.   Shi X, Lin Y, Wang Y (2024) Targeting poverty alleviation and stock price crash risk. Financ Res Lett 69:106159