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In the Name of God, the Compassionate, the Merciful

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Table of Contents

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- *Results* including the findings compare it with the findings of previous and interpretation of compliance or inconsistency of findings with research findings and theories.*Conclusion* includes a summary of the problem, provide a summary of the results and overall conclusion and

recommendations based on the results (policy recommendations is necessary only in applied research and, if necessary, recommendations for future research accordant with the research limitations or how development of current research;
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Editor's Note

I am pleased to announce that the Ferdowsi University of Mashhad is publishing Iranian Journal of Accounting, Auditing & Finance (IJAAF). On behalf of the board of the IJAAF and my co-editors, I am glad to present the Volume 1, Issue 1 of the journal in December 2017; the journal will publish four issues in a year. The board includes experts in the fields of accounting, finance and auditing, all of whom have proven track records of achievement in their respective disciplines. Covering various fields of accounting, *IJAAF* publishes research papers, review papers and practitioner oriented articles that address significant issues as well as those that focus on Asia in particular. Coverage includes but is not limited to:

- Financial accounting
- Managerial accounting
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- Accounting education

Perspectives or viewpoints arising from regional, national or international focus, a private or public sector information need, or a market-perspective are greatly welcomed. Manuscripts that present viewpoints should address issues of wide interest among accounting scholars internationally and those in Asia in particular.

Yours faithfully,
Mahdi Moradi
Editor in Chief

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Quarterly

RESEARCH ARTICLE

The Methodology of Social and Stakeholders' Analysis to Participate in Corporate Sustainability Using Tax Compliance

Noorollah Rahmani Picha, Azita Jahanshad *, Farzaneh Haiderpour

Department of Accounting, Tehran Central Branch, Islamic Azad University, Tehran, Iran

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Abstract

The measures taken by companies are in line with their activities, in addition to ensuring the interests of shareholders and the company, and have social, environmental, and economic effects on society. Today, we are witnessing an increase in the concerns of society under the influence of these measures. One of these measures is the payment of taxes by the company, which can lead to an increase in social services and the prosperity of the economic system and generally improve the status of society. The primary purpose of this research is to explain the methodology of social and stakeholder analysis to participate in corporate sustainability by using the tax compliance of stock exchange companies. The current research is developmental-practical regarding objective, mixed-exploratory (causal) data, and survey-cross-sectional. Therefore, this research method to achieve the mentioned goals is descriptive-analytical. In this research, the components are first determined by the Delphi method, and then the significance of the components is checked using the factor analysis method by Smart PLS Software. The research findings in the first stage, which were obtained by using a questionnaire and receiving the opinions of experts, include the identification of the following components: the perception of stakeholders, including internal stakeholders and our company; Social norms, including personal, descriptive, subjective and predicted norms, and participation in corporate sustainability includes desire, plan, commitment, and enthusiasm. Also, in the second stage, which was done by distributing questionnaires among the accountants and financial managers of the companies admitted to the stock exchange, the results show that social and stakeholder-related indicators, which include stakeholders' perceptions and social norms, lead to tax compliance to participate in corporate sustainability. In previous studies, the subject of corporate sustainability used tax compliance to examine the impact or relationship. In this research, modeling was carried out, so the present results can provide useful suggestions to law-making institutions, including the audit organization and the Tehran Stock Exchange Organization, so that these organizations apply more appropriate regulations.

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*Corresponding Author:
Azita Jahanshad
Email: az_jahanshad@yahoo.com
Tel: 09357908950
ORCID:

1. Introduction

Despite considerable efforts made by organizations to expand social and environmental reporting and support sustainable reporting in recent decades, it is challenging to recognize these reports according to legal standards in most legal contexts. Progress in reporting the above field will be complicated due to the complex social, environmental, and political environment. One of the periodically reviewed factors is the perspective of organization members, such as senior managers and accountants, on processes supporting sustainable reporting (Shafer and Lucianetti, 2018). Stakeholders, especially shareholders, seek to invest in companies that bring favorable economic returns. On the other hand, companies must pay attention to their social responsibilities to achieve sustainable competitive advantage, increase value and improve economic performance. Many also consider it necessary for companies to pay attention to the category of social responsibility to play a real role in society through responsible social, ethical, legal and environmental standards. There are two competing views regarding the social role of companies. In the first view, the board of directors' social responsibility goals increase the shareholders' welfare. Reduction of direct costs (energy, materials, wasted time, etc.); Increasing employee productivity (increasing motivation, reducing absence, etc.); reducing risk (easier access to credit, increasing investors' interests, attracting stakeholders' support, etc.) and improving the company's competitive image are the results of companies paying attention to social responsibility (Deng et al., 2013).

The growth and development of industries, factories and business units, along with the creation and evolution of social institutions, the transformation in the role of information, the change in government organizations and finally, the transformation in ethics, have gradually put obligations on the companies that did not experience such obligations officially before these events (Aras and Crowther, 2008). Among the consequences of these changes is the increasing interest of stakeholders, shareholders and customers in environmental and social issues. In other words, companies operate as multi-purpose institutions instead of having a purely economic function. One of the challenging and interesting topics is companies' participation in the sustainability field, which shows companies' economic, social and environmental achievements (Özsözgün Çalişkan, 2014). In this regard, social responsibility as one of the dimensions of corporate sustainability is the company's belief that all the company's actions (including the company's tax payment policies) impact all stakeholders, including shareholders, employees, society, the government, customers and others. From this point of view, responsible activities include paying attention to the effects of the company's measures and efforts to affect and protect all stakeholders' interests positively. Irresponsible activities include actions that have negative effects and widely affect corporate governance, employee relations, society, public health, human rights, the environment, etc. (Hoi et al., 2013).

The business environment around the world is fragile and prone to uncertainty. This uncertainty is caused by events such as the collapse of the global economy in 2008, the 2019 COVID-19 pandemic and climate change, and the current conflict between Russia and Ukraine. During these periods of uncertainty, businesses find it challenging to achieve sustainability. Despite the conditions of uncertainty, companies must strive for survival because they are expected to operate for sustainable growth and survive challenges and issues. The company's sustainable growth is the most important stage in which it can increase its income without reducing its financial ability (Asaolu et al., 2022).

One of the company's actions in the field of social responsibility is the policies related to tax payments. Therefore, in the case of tax compliance, the company pays its fair share of real taxes to the government to finance public goods and social services that improve corporate sustainability (Freedman, 2003; Freise et al., 2008). Hence, the realization of government tax revenue as a result of corporate tax compliance in all developed and developing countries has led to the prosperity of the

country's economic system. In addition, the government's investment in economic infrastructure will increase social services and improve society's condition (Bame-Aldred et al., 2013). Therefore, from a social point of view, corporate tax compliance can be considered a responsible social behavior of the company.

In the same way, social norms are also variable, such as the prevalence or acceptance of tax evasion in a reference group (Alm, 2019; Park and Hyun, 2003) or naturally between cultures with sub-cultural groups (Alm, 2019). According to Wenzel's (2004) view of the logic of social ethics, social norms influence the taxpayer's behavior by identifying a social group. This causal effect is mediated by internalizing social norms and becomes a part of people's formed being. According to the perspectives in the sociological field, human behavior is significantly shaped by social norms and improves tax compliance. On the other hand, stakeholders' perception predicts their participation in practice. In addition, the attitudes and perceptions of managers and decision makers of companies also significantly affect tax compliance (Nilipour, 2016). It is worth noting that managers' perception of tax compliance is based on management's attitude and stakeholders' pressure to limit managers' opportunistic behavior (Martin and Hadley, 2008). Therefore, achieving a complete understanding of social characteristics and the perception of stakeholders impacts the attitude of the company's participation in the field of sustainability.

Despite the growth and great attention of countries and companies to the category of sustainability and emphasis on the effectiveness of this information in the decision-making of the stakeholders, the companies admitted to the Tehran Stock Exchange have neglected the appropriate disclosure of economic, social and environmental information and not enough attention has been paid to the issue of sustainability in Iran. No research has been done in this field. Therefore, a research gap in this connection is evident, so there must be mechanisms and supervision to make the companies implement and disclose this category and be accountable to the stakeholders' expectations. One of the appropriate solutions in this field is to identify the factors affecting corporate sustainability so that by applying and strengthening these factors, the implementation and disclosure situation can be improved so that Iranian companies can follow the path of sustainable development. In previous studies, the subject of corporate sustainability used tax compliance to investigate the impact or relationship. In this research, the implementation of innovative modeling was discussed. Therefore, the present research results can provide helpful suggestions to law-making institutions, including the audit organization and the Tehran Stock Exchange Organization, so that these organizations apply more appropriate regulations. Therefore, due to the importance of the topic of sustainability and the existence of a research gap about the topic stated in recent years, in this research, an attempt was made to explain the methodology of social analysis and stakeholders to participate in corporate sustainability using tax compliance.

2. Theoretical Principles and Literature of the Study

2.1 Corporate sustainability

Various definitions have been created in the literature to express corporate sustainability. Some studies have explained this term as a management approach that allows companies to grow while providing economic, social and environmental value (Kantabutra and Ketprapakorn, 2020; Valente, 2012). According to Elkington's (1998) perspective, corporate sustainability is measured by focusing on economic, environmental and social dimensions. Other studies have shown companies' sustainability from different perspectives, such as a favorable future for all stakeholders of companies (Asaolu et al., 2022). Corporate sustainability is a new and growing concept that has been viewed as a global issue in recent years and has been the focus of researchers from the perspective of developing

the concept and dimensions. Corporate sustainability was exclusively related to the financial perspective of companies at the beginning. Still, its main goal was to maximize shareholder value through which companies benefit from being sustainable in the long term. Carroll (1979) stated that corporate sustainability should include economic, legal, ethical and humanitarian obligations towards the company's work environment. Today, Carroll's model, integrated with the theory of interest groups, is receiving much attention from researchers. Sustainability is focused on the future and is related to ensuring that the right to choose the use of resources in the future is not limited by the decisions made in the present (Aras and Crowther, 2008). One of the first and most well-known definitions of corporate sustainability provided by the World Committee Environment and Development (WCED) is "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (Zhang, 2017). The World Business Council on Sustainable Development states, "Sustainable development is a simultaneous activity for economic prosperity, environmental quality, and social justice".

Previous studies show that the stakeholders pursue different social, environmental and economic goals from the companies. According to the change in the attitude of the companies from the ownership theory (which is to maximize the wealth of the shareholders) towards the theory Stakeholders (which is to maximize the wealth of all stakeholders), the success of organizations is to report sustainability dimensions to maintain the social, environmental and economic interests of all stakeholders (Buchholz and Rosenthal, 2005). In this regard, Elkington (1998) stated in his research that companies' ultimate goal is to create shareholder value and economic, environmental, and social values for all stakeholders.

Today, companies must be responsible for their activities' various beneficial and harmful effects on society and the environment in which they exist. In addition, companies should properly disclose these effects in a sustainability report to provide a detailed description of the governance structure, the approach to interaction with shareholders and the triple bottom line performance (social, economic and environmental aspects). Global Reporting Organization (2011) defined sustainability reporting as measuring, disclosing and being accountable to internal and external stakeholders for organizational performance towards sustainable development goals. This has been widely proven by researchers who pointed out that corporate sustainability is likely to affect the company's profitability and overall performance in today's dynamic and complex business environment. Sustainability builds the foundation for maintaining and improving the value of the company. Companies benefit from establishing sustainability in their core strategy (Naciti, 2019). Environmental, social and governance factors and corporate social responsibility represent the two main categories of corporate sustainability variables. Environmental, social, and governance variables and corporate social responsibility can vary mainly in terms of sustainable performance and disclosure of sustainability-related subsections. Most studies on the sustainability performance of companies rely on databases (Velte, 2022).

2.2 Tax compliance

The definition of tax compliance is as follows: "Reporting all income and paying all taxes according to executive laws and regulations and legal decisions" (Alm, 2019). On the other hand, tax evasion is illegal and includes deceptive actions by taxpayers to hide their tax debt. The Sixteenth Amendment to the United States Constitution authorized the federal government to impose an income tax, and this amendment was ratified in 1913, shortly after World War I. At that time, citizens were willing to pay revenue to support the United States during the war (Rezac and Urofsky, 2011). However, attitudes towards tax compliance have changed drastically since then. The latest Internal Revenue Service (IRS) report estimated tax evasion at $385 billion in 2006 alone. The US tax system

relies on taxpayers voluntarily complying with the tax law. IRS estimates show that small changes in discretionary compliance percentages can significantly impact tax revenue. As a result, the US government is constantly trying to increase tax compliance (Jimenez and Iyer, 2016).

2.3 Tax norms

Social norms are defined as rules and standards that group members understand, and these norms guide or limit social behavior without the application of law (Cialdini and Trost, 1998). The four social norms, constructs identified by Cialdini and Trost (1998), are injunctive, descriptive, subjective, and personal norms. Descriptive norms develop from observing how others behave in certain situations. Injunctive norms specify what should be done and are, therefore, the moral rules of the group. Subjective norms are specifically related to the expectations of significant others (e.g. family, friends, colleagues, etc.). Personal norms are a person's expectations for behavior that may develop as part of the internalization of injunctive norms (Bobek et al., 2013). Injunctive, subjective, and personal norms relate to the expectations of certain groups or individuals or describe what a person believes he/she should do in a given situation. Descriptive norms are only one's understanding of what others do. In addition to the separation of these social norm constructs by Cialdini and Trost (1998), Kallgren et al. (2000) also emphasized that a particular social norm is unlikely to influence people's behavior unless that social norm is salient or central to the behavior (i.e. that the norm does not affect the individual's behavior unless it is essential). Research on social norms in social psychology has clearly shown that social norms drive behavior in meaningful ways. Some studies show that understanding the influence of social norms and the relationships between these structures is vital for changing behavior (Brown and Moodie, 2009; Goldstein et al., 2008).

2.4 Stakeholders

Stakeholder theory states, "Any group or individual who can influence the realization of organizations' goals is a stakeholder" (Freeman et al., 2010). Therefore, there are different groups of stakeholders. Stakeholders are divided into three main groups: external stakeholders, intermediate stakeholders, and internal stakeholders. External stakeholders include the government, creditors, suppliers, customers and competitors. At the same time, environmental protection organizations and auditors are intermediate stakeholders. Internal stakeholders include shareholders, managers, and other employees. Legitimacy theory and stakeholder theory have different points of view, but at the same time, they have commonalities. Legitimacy theory considers only the interaction of organizations with society, but stakeholder theory has developed this concept by focusing on different groups of stakeholders and their relationships with each other (Nilipour, 2016). This theory accepts that different stakeholders have different opinions about how to run an organization, and as a result, their interests and concerns about the organization also differ. Organizations must pay attention to stakeholders and respond to their demands to gain legitimacy and manage the organization. According to the stakeholder theory, organizations can only get stakeholders' opinions and approval by disclosing information. Solomon and Lewis (2002) believe that one of the best ways for organizations to legitimize their affairs is to communicate with stakeholders, which can only be done by disclosing information. Therefore, gaining legitimacy can be the main reason organizations engage in social activities. Publishing sustainability reports was one of the organizations' strategies to respond to stakeholders' pressure and thus gain legitimacy. So, due to the problems of brokers - conflict of interests between managers and stakeholders and the lack of regulations and regulations in sustainability reporting, stakeholders are concerned about the reliability of disclosed sustainability information. Voluntary acceptance is a lateral communication tool and helps organizations influence stakeholders' mindsets by demonstrating the organization's professional performance and common

standards (Gillet, 2012).

2.5 Theoretical principles

Social norms or value orientations are among the most common social psychological variables investigated in studies related to taxpayers (Bobek et al., 2013; Wenzel, 2005). While most studies directly confirm the relationship between social norms and taxpayers' compliance, there seems to be a lack of consistency in the results of studies measuring social norms.

For example, Blanthorne and Kaplan (2008) examined the relationships between the opportunity to minimize the amount of taxable income, social norms related to tax acceptance, ethical attitudes towards compliance, and the tendency to minimize profits. Social norms were defined as people's understanding of the influence of factors such as a spouse, family, friends and business colleagues on their adaptive behavior. Ethical attitudes were assessed and participants were asked questions regarding underreporting income (profit), including whether they felt underreporting was morally wrong and guilty due to not reporting?). The results of structural equation modeling showed that the possibility of reporting less than the truth had a direct relationship with informal behavior (based on self-reporting of less than the truth, which was effective in the tax returns of the past years) and also an indirect relationship with the less than the truth reporting through the relationship with moral attitudes (ethical attitude has a less mediating role in the relationship between opportunity and reporting than it does). Social norms were not directly related to underreporting but were influenced by underreporting through their association with moral attitudes (moral attitudes generally moderated the association between social norms and underreporting).

Bobek et al. (2007, 2013) examined the effects of four distinct categories of social norms explored by Cialdini and Trost (1998): (a) general social expectations (anticipated norms); (b) valuable expectations of others (subjective norms); (c) personal expectations or standards (personal norms); and (d) standards based on observations of others' behavior (descriptive norms). Bobek et al. (2007) stated that a composite measure of personal and subjective norms and predicted norms were significantly related to ultimate goals in a sample taken from Australia, Singapore, and the United States. However, descriptive norms were not related to goals. Bobek et al. (2013), based on the analysis of the items in the studies of Blanthorne and Kaplan (2008), concluded that this measure was equal to the personal norms conceptualized by Cialdini and Trost (1998). It is also apparent that Blanthorne and Kaplan's measure of "social norms" assesses the expectations of others and thus can reasonably be classified as subjective norms. Consequently, they suggested that the findings of Blanthorne and Kaplan (2008) show that personal (subjective) norms are directly (indirectly) related to taxpayers' decisions. The results of the studies show that individual and subjective norms are directly related to tax compliance decisions, while predicted and descriptive norms are indirectly related to their compliance through their effects on personal and subjective norms.

Stakeholder theory is one of the organizational management theories. The concept of stakeholder was first proposed by the Stanford Research Institute in 1936. Freeman (2010) can be considered the founder of stakeholder analysis and the introduction of this discussion into the literature on strategic management. In 1984, he presented an article titled strategic management with a stakeholder approach, in which he presented a model and examined how to include stakeholder analysis in strategic management (Freeman, 2010). After that, researchers in different fields, such as natural resources, business management, project management, and policy making, presented definitions and solutions according to the characteristics of their scientific space (Alm, 2019). Crosby (1992) considered stakeholder analysis a vital strategic management tool in an article he presented in 1992 (Crosby, 1992). Clarkson used the stakeholder framework to evaluate and analyze the performance of companies in 1995 (Clarkson et al., 2011). Freeman et al. (2010) published a book titled "Managing

for Stakeholders" in 2007. The content of this book includes how to lead and manage stakeholders (Freeman et al. 2010). In 2009, Linda Bourne investigated the different effects of stakeholders according to different criteria and tools (Blanthorne and Kaplan, 2008). Although stakeholder analysis has its roots in business management, it has been developed to such an extent that it has also entered the fields of economics, political science, game theory, and environmental science. Common patterns of stakeholder analysis use a wide range of qualitative and quantitative tools to identify stakeholders, their position, impact on other groups, and their interests in a specific policy and program. In addition, stakeholder analysis provides an idea about the impact of policies and programs on political and social forces. It explains different perspectives on proposed policy and potential conflict between individuals and groups and helps identify potential strategies for negotiating with opposing stakeholders (Amalia and Suprapti, 2020).

Table 1. Questionnaire of the development process and application of stakeholder analysis

Presenting the concept of beneficiaries for the first time at the Stanford Research Institute			
Application of the concept of stakeholders in organization planning	Application of the concept of stakeholders in the theory of systems	Application of the concept of stakeholders in corporate social responsibility	Application of the concept of stakeholders in the theory of organization
Strategic management: a stakeholder-based approach by Freeman (2010)			
Descriptive/empirical aspects	Instrumental aspects	Normative aspects	

In the traditional view, which is largely based on agency theory, the company is solely responsible to the shareholders, and the most important interaction in the company is between managers (representatives) and shareholders (owners). Therefore, activities outside this range are unimportant and do not make the company profitable. According to this point of view, there is little connection between corporate social responsibility and company procedures. In fact, according to agency theory, a company only participates in various activities, including activities related to social responsibility, when they increase the company's profitability. In this situation, the cost of such activities is usually considered reputation or political costs in agency theory (Scholes et al., 2005; Chen et al., 2010). A research literature review has shown that tax compliance is a complex issue. Multiple variables influence this variable. Beneficiaries' attitude to tax compliance is not very good based on the assumptions of agency theory. Hence, recent paradigms analyze tax compliance behavior in relation to stakeholders (Arzadun et al., 2020).

The corporate sustainability report is the company's belief that all its actions (including the company's tax payment policies) affect all stakeholders, including shareholders, employees, society, government, customers, and others. From this point of view, responsible activities include paying attention to the effects of the company's actions and trying to have a positive effect and protect the interests of all stakeholders. Irresponsible activities are also defined as actions that have negative effects and widely affect corporate governance, employee relations, society, public health, human rights, the environment, etc. (Hoi et al., 2013). In the case of tax compliance, the company pays its fair share of real taxes to the government in order to finance public goods and social services. In this way, the realization of government tax revenue as a result of corporate tax compliance in all developed and developing countries has led to the prosperity of the country's economic system. In addition the government's investment in economic infrastructure will increase social services and improve society's situation (Bame-Aldred et al., 2013). Therefore, from a social point of view, corporate tax compliance can be considered a responsible social behavior of the company. It is possible to go one step further and show that nations also want companies to comply with tax laws in addition to governments. Therefore, when a company is non-compliant with taxes, its behavior is

against the wishes of the government and the nation. It may have a negative impact on society. However, the important point is that corporate tax compliance will only be related to corporate social responsibility if it significantly affects a large part of society (Lanis and Richardson, 2012).

The sustainability report shows company owners' commitment to running a sustainable business (Mondal, 2021). Sustainability reporting leads to the legitimacy of the company. According to some previous studies such as Timbate (2023) and Hoi et al. (2013), sustainability reporting positively affects tax avoidance. Corporate social responsibility also has a positive effect on tax avoidance. Also, Amalia and Suprapti (2020) and Lanis and Richardson (2012) stated that sustainability reporting has no effect on tax avoidance at all (Fuadah et al. 2022). Sustainability reports are one of the ways through which organizations reveal their corporate social responsibility activities related to environmental, social and governance issues. In 2019, the Global Reporting Initiative (GRI) updated its standards to include tax issues. Consistent disclosure about tax strategy, governance and risk management meets the reporting expectations of various stakeholders. Therefore, transparency and tax compliance are aspects of sustainable reporting expected by stakeholders (Faúndez-Ugalde et al., 2022).

According to legitimacy theory, sustainable non-financial performance is favorable to all stakeholders, including customers, society and the environment. This theory also states that failure to comply with social norms and environmental requirements threatens organizational legitimacy, sustainable financial reporting, and, therefore, organizations' use of the environment and meeting the needs of society. According to the legitimacy theory, disclosure of information in annual reports and other methods to legitimize the decisions and actions of companies directly addresses society's concerns and improves the company's legitimacy. Legitimacy theory explains stakeholders' intervention in corporate social responsibility disclosure (Buallay and Al-Ajmi, 2020). On the other hand, stakeholder theory suggests that business entities disclose voluntary information to satisfy stakeholders' interests and obtain more information. Companies and financial institutions have diverse and abundant stakeholders, and their stakeholders are wider than those of other economic sectors. Therefore, they need to gain social acceptance, adhere to social contracts with society, and fulfill the expectations of their stakeholders. They are under a lot of pressure. Previously, the relationships between the variables related to the theory of legitimacy and corporate sustainability disclosure were presented from different aspects. Stakeholder theory refers to the fact that sustainable activities and performance improve the company's long-term value by fulfilling corporate social responsibility, fulfilling environmental obligations and increasing the company's reputation (Clarkson et al., 2011). Weber (2008) argues that management's consideration of stakeholders' interests is a key factor in the performance and disclosure of social and environmental sustainability.

2.6 The principles of hypothesis development

Corporate sustainability can be defined as the extent to which companies accept social and environmental factors in their operations and, finally, the impact these two factors have on society and the natural environment. Past studies have shown that corporate sustainability has both non-financial and financial consequences. Regarding non-financial consequences, sustainability performance affects consumer purchasing decisions, employee motivation, and companies' mass media coverage. Regarding the financial implications, the sustainability performance of companies is related to financial distress, return on equity, information asymmetry, and company value and earnings management. Sustainability performance has many non-financial and financial implications and provides significant information useful for stakeholders' decision-making (Jia and Li, 2022). Shafer and Wang (2018) state that taxpayers with high Machiavellianism reported much less moral social norms, which indicates that reported social norms are generally related to tax evasion

intentions. Aktaş et al. (2013) found that stakeholders are interested in issues such as the development of sustainability-related strategic plans, measurement of sustainability performance, and its reports. In their research, Shafer and Lucianetti (2018) concluded that shareholder orientation positively correlates with support for sustainable reporting. Kwakye et al. (2018) stated that only the subjective norm and perceived behavioral control significantly determine the intention to participate in sustainability accounting and reporting, primarily by the availability of resources and pressure from major stakeholders. Alm et al. (2019) showed that normative appeals generally have a moderate and positive effect on tax compliance, although they were not always statistically significant. The size of normal command messages, such as approval or disapproval of reported taxes, has increased by about 2%. Romero et al. (2019) investigated three common reporting models, including an annual report (address to shareholders), a sustainability report (address to stakeholders) and an integrated report (address to shareholders). Based on this, the content of sustainability reporting information in Spanish companies showed that sustainability information is issued in the annual report of higher quality than sustainability reports and integrated reports. Correa -Garcia et al. (2020) showed that the concentration of control in groups has a negative effect on the quality of sustainability reporting. Variables such as foreign ownership, the age of the business group and the board of directors' size help business groups improve the quality of their sustainability and voluntary disclosure practices.

Timbate (2023) stated that there is a debate in academia and the business world about whether paying taxes should be part of corporate social responsibility. The results of this study show that companies' CSR and tax payment decisions are related to reaching or beating the desired level or maintaining a competitive advantage over being ethical or unethical. Jamshidi et al. (2022) identified 20 main categories and 123 subcategories in the paradigm model, which includes the model's content, organization and processing as the main category and causal conditions (professional actions, structural actions, professional environment, audit). Background factors are (auditor requirements, process context, institutional background auditor capabilities), intervention conditions (human, structural, managerial and supervisory factors), strategies (development actions and support actions), process outcomes, and structure process effects. Based on the findings, the following hypotheses were proposed:

H1: The components related to stakeholders' perceptions lead to tax compliance to participate in corporate sustainability reporting.

H2: The components related to social norms lead to tax compliance to participate in corporate sustainability reporting.

3. Research Methodology

The current research is developmental-practical regarding objective, mixed-exploratory (causal) data and survey-cross-sectional. Therefore, this research method to achieve the mentioned goals is descriptive-analytical. The general purpose of the current research is to concentrate mostly on compiling, identifying, validating, creating appropriateness, and finally, determining the role of indicators and components. In the following, the main steps of the research method are described.

First step: In this research, a questionnaire is used to compile, identify, and establish the appropriateness of the social components and beneficiaries for tax compliance. It should be noted that this questionnaire was prepared based on the sources listed (Table No. 1). At this stage, a basic questionnaire is designed and distributed among experts in the form of a five-option Likert spectrum (completely relevant, relevant, relatively relevant, unrelated and completely unrelated). The purpose of presenting the questionnaire to the experts is to discover the components related to tax compliance (of course, to participate in corporate sustainability).

In the following, according to the average scores obtained for the components related to tax compliance, the second questionnaire is presented to the experts along with the obtained scores. This helps the expert to understand the difference between his own opinions and the opinions of others and adjust his opinion if needed. The difference between the averages of the first and second stages (the first and second questionnaires) is calculated in the next step. If this average difference is less than the threshold of 0.20, the process is stopped (Lanis and Richardson, 2012). Otherwise, the Delphi method continues until a consensus among experts is reached. It should be noted that at this stage, the average calculated for the components of the questionnaire that have an average less than the average are removed. After applying the Delphi method, the important components from the expert's point of view are identified during different stages.

Second step: after describing the social components and stakeholders with tax compliance, the role of the components above is investigated to participate in the sustainability reporting of stock exchange companies. At this stage, the questionnaire is distributed to the financial and accounting managers of Tehran Stock Exchange companies by targeted sampling. Then, answers to the questionnaires were collected using a 5-level Likert scale (I completely disagree, I disagree, I have no opinion, I agree, I completely agree). Using the factor analysis method, SmartPLS software (Cronbach's alpha tests, composite reliability (CR) and average variance (AVE) for reliability and convergence and divergence tests for validity), the significance of social and stakeholder-related components regarding tax compliance is measured and evaluated to participate in the sustainability report.

3.1 Statistical population, sampling method and sample size

The statistical population in this research includes the following:

1- To determine the indicators and items related to social dimensions and beneficiaries, 28 experts, who are members of the academic staff of universities and managers and experts of the tax organization, are used.

2- In order to investigate the role of dimensions, indicators, social components and stakeholders to support the sustainability report from the perspective of tax compliance, a questionnaire has been collected, the statistical population of which includes the financial and accounting managers of all companies admitted to the Tehran Stock Exchange except for financial intermediaries, such as banks, investment funds, insurances, etc. 276 financial managers or senior accounting experts participated in this research. The statistical sample is based on Cochran's formula and has an error rate of 0.05 for the population of this research, which is 160.85 (about 161 respondents).

3.2 Description of research components

In general, the description of social components and beneficiaries with tax compliance is based on the research of Shafer and Lucianetti (2018) and Shafer and Wang (2018) and as described in Table (2). Therefore, as mentioned in the first step of the research method, social components and stakeholders related to tax compliance are compiled and identified based on the following questionnaire. It should be noted that at this stage, it is possible to identify other components based on the opinion of experts, so the opinion of other experts regarding new components should also be evaluated.

Table 2. Questionnaire of social components and beneficiaries with tax compliance

Aspects	Indicator	Components	Source	The appropriateness of realized components
Social	Social norms	Personal norms Descriptive norms Subjective norms Anticipated norms	Shafer and Lucianetti, 2018/ Bobek et al., 2013/ Bobek and Hatfield, 2003/ Bobek, Roberts, and Sweeney, 2007/ Davis et al., 2003/ Hanno and Violt, 1996/ Wenzel, 2004 and 2005	Totally relevant related Relatively relevant unrelated Totally unrelated
Beneficiaries	Stakeholders' perceptions of participation in sustainability reporting	The stakeholders of our company (shareholders, employees, managers, society, etc.) Internal stakeholders (employees, managers and shareholders)	Shafer and Lucianetti, 2018/ Solomon and Lewis, 2002 / De Waal, 1996 / Hanno and Violette, 1996/ Ostas, 2004	

4. Research Findings

4.1 Descriptive statistics

In this research, out of 28 experts and 161 respondents of financial and accounting managers of stock exchange companies, the sample experts, 25% are women, and 75% are men. In the financial and accounting managers sample, 24.2% are women, and 75.8% are men. Regarding educational degrees, in the sample of experts, 42.46% of PhD students and 53.58% of PhD students. In the sample of financial managers, education is 41.6% for bachelor's degrees, 48.4% for master's degrees, and 9.9% for doctorate degrees. In terms of work experience, in the sample of experts, the work experience of 3.6% is less than 5 years, 17.9% is between 5-10 years, 0.50% is between 11-15 years and 28.6% is more than 15 years. In the financial and accounting managers sample, 24.8% of work experience is less than 5 years, 34.8% between 5-10 years, 24.8% between 11-15 years and 15.5% more than 15 years. Table (3) shows the details of the participants:

In the following, the table of descriptive statistics of the research variables is stated:

Table number (4) shows the descriptive statistics of variables (social norms and perceptions of stakeholders and support for sustainability reports). According to the results, the highest average for the variable of beneficiaries is (4.05) and the lowest average for the variable of social norms is (3.77). In general, a normal distribution has zero skewness and kurtosis. In this research, the kurtosis value and skewness of the variables are close to zero, indicating that the variables have a symmetrical - distribution and their distribution is similar to normal.

4.2 Results related to Delphi test based on experts' opinion

This research uses the percentage frequency for the consensus of experts' opinions. According to the research of Lanis and Richardson (2012), the percentage frequency is often used for consensus when a certain percentage of votes falls within a certain range. According to the experts' answers in the Delphi phase, 10 essential items (more than 50%) have been identified. Of course, it should be noted that in the initial questionnaire, 9 specific items were presented for asking for opinions. However, according to respondents' opinions, the final questionnaire was increased to 1 item in the second stage, and all the items' added items and frequency results were explained.

Table 3. Characteristics of the participants in the research

Respondents	Gender	Frequency	Percentage	Cumulative frequency
Experts	Female	7	25.000	25.000
	Man	21	75.000	100.000
	Total	28	100.000	
Financial managers	Female	39	24.200	24.200
	Man	122	75.800	100.000
	Total	161	100.000	
Respondents	Education	Frequency	Percentage	Cumulative frequency
Experts	Masters	0	0.000	0.00
	PhD student	13	46.420	46.420
	Ph.D.	15	53.580	100.000
	Total	28	100.000	
Financial managers	Bachelor's	67	41.600	41.600
	Masters	78	48.400	90.000
	Ph.D.	16	9.900	100.000
	Total	161	100.000	

Respondents	Age	Frequency	Percentage	Cumulative frequency
Experts	30 years and less	3	10.700	7.100
	31-40 years	8	28.600	39.300
	41-50 years	11	39.300	78.600
	Over 50 years old	6	21.400	100.000
	total	28	100.000	
Financial managers	30 years and less	35	21.700	21.700
	31-40 years	46	28.600	50.300
	41-50 years	48	29.800	80.100
	Over 50 years old	32	19.900	100.000
	Total	161	100.000	

Respondents	Experience	Frequency	Percentage	Cumulative frequency
Experts	Less than 5 years	1	3.600	3.600
	5-10 years	5	17.900	21.500
	11-15 years	14	50.000	71.500
	Above 15 years	8	28.600	100.000
	Total	28	100.000	
Financial managers	Less than 5 years	40	24.800	24.800
	5-10 years	56	34.800	59.600
	11-15 years	40	24.800	84.400
	Above 15 years	25	15.500	100.000
	Total	161	100.000	

Table 4. The descriptive table of research variables

Questions	Description	Number of respondents	Average	Standard deviation	Maximum	Minimum
13-14	Beneficiaries	161	4.050	0.805	5.000	1.000
15-18	social norms	161	3.770	0.820	5.000	1.000
22-19	Support for sustainability reports	161	3.932	0.667	5.000	1.000

Table 5. The frequency of respondents to research items (in the second stage)

No.	Research indicators and components (items)	Extremely necessary	Necessary	Almost necessary	Little necessity	No necessity
	Stakeholder perception index					
1	Internal stakeholders (employees, managers and shareholders)	%28.6	%35.7	%21.4	%10.7	%3.6
2	The stakeholders of our company (shareholders, employees, managers, society, etc.)	%35.7	%28.6	%3.6	%28.6	%3.6
	Index of social norms					
3	Personal norms	%39.3	%14.3	%28.6	%14.3	%3.6
4	Descriptive norms	%25.0	%28.6	%28.6	%14.3	%3.6
5	Subjective norms	%21.4	%46.4	%10.7	%17.9	%3.6
6	Anticipated norms	%21.4	%39.3	%32.1	%3.6	%3.6
	Sustainability report support index from the perspective of sustainability reporting					
7	Desire	%17.9	%35.7	%39.3	%7.1	-
8	Program	%32.1	%35.7	%21.4	%10.7	-
9	Obligation	%14.3	%64.3	%21.4	-	-
10	Passion	%25.0	%32.1	%25.0	%10.7	%7.1

In the following, the Kendall coefficient was used to determine the level of consensus among the respondents (experts), whose values can be seen in table number (6):

Table 6. The results of the Kendall coefficient test to check the level of consensus among experts

Number of experts (28 people)	First step	Second step
Kendall coefficient	0.161	0.789
Chi-square coefficient	16.903	1701.124
Degrees of freedom	21.000	21.000
Confidence interval	0.117	0.000

Since the Delphi stage was repeated twice, in the second round, an agreement was reached between the experts (Kendall's coefficient = 0.789); this rate indicates a high level of consensus in the respondents' opinions to determine the necessity of the research components. At this stage, it can be said that the researcher has attempted to identify the components related to social norms and stakeholders for tax compliance to support the sustainability report. It should be noted that at this stage, the experts also had a considerable agreement on the conceptual model of the research, which is presented below (Figures 1 and 2) with path coefficients, factor loadings and significance levels.

4.3 The results of convergent validity and reliability of the measurement tool

Considering Table (7) and the value of Cronbach's alpha coefficient and the composite reliability shown for each criterion (item), which is more than 0.70, it can be seen that the measuring instrument of the items is reliable. This research used the average variance extracted (AVE) to check the convergent validity. This value is higher than 0.50 for all research criteria, which indicates convergent validity for the measurement tool.

Table 7. The results of convergent validity and reliability of measurement tools

Research variables	No. of items	Cronbach's Alpha coefficient	Composite reliability	Average extracted mean
Stakeholders	2	0.897	0.772	0.813
Social norms	4	0.912	0.872	0.723
Support for sustainability reports	4	0.880	0.817	0.647

Fornell and Larcker's matrix to check divergent validity is shown in Table (7). Fornell and Larcker (1981) state that divergent validity is acceptable when the average variance extracted for each construct is greater than the shared variance between them. Construct and other constructs (i.e. the square of the correlation coefficients between constructs) in the model. The main diameter numbers of the Fornell and Larcker matrix shown in Table (8) show that the measurement tool in this research has an acceptable divergent validity.

Table 8. Fornell and Larcker's matrix table to check divergent validity

Variables	Social norms	Stakeholders	Support for sustainability reports
Social norms	0.850		
Stakeholders	0.730	0.902	
Support for sustainability reports	0.840	0.797	0.804

Factor loads are correlation coefficients between implicit and explicit variables in a measurement model. This coefficient determines how much the latent variable explains the variance of the manifest variables. Table (9) summarises the results related to the structural model's factor loads. Factor loads of at least 0.4 for each item indicate the model's appropriate structure (Hair et al., 2016). Table (9) shows that the factor load for all items was more than 0.4.

Table 9. The results of structural model factor loads

Factor	Item	Factor load	Factor	Item	Factor load
Stakeholders	Internal stakeholders	0.918	Support for sustainability reports	Desire	0.843
	Stakeholders of our company	0.885			
Social norms	Personal norms	0.816		Plan	0.852
	Descriptive norms	0.874		Obligation	
	Subjective norms	0.864		Passion	0.769
	Anticipated norms	0.845			

4.4 Testing the theoretical model of the research

The quality check test is one of the tests to evaluate the measurement model and reflective structure. The commonality index with cross-validity (CV com) is used to evaluate the measurement model. This index measures the path model's ability to predict observable variables through their corresponding hidden values. The following uses the redundancy index with cross-validation (CV Red) or predictive correlation to evaluate the structural model. Its purpose is to check the structural model's ability to predict. If these indicators show a positive number in the model quality test, the model has the necessary quality. On the other hand, considering that the value of the coefficient of determination of the support of the sustainability report is (0.835), the model has identified and tested more than 70% of the influential factors.

Table 10. The results of model quality and coefficient of determination

Variables	CV com	CV Red	R square coefficient of determination
Beneficiaries' perception	0.420	0.110	0.835
Social norms	0.160	0.180	
Support for sustainability reports	0.230	0.290	

4.5 General model fitting based on GOF criteria

In this section, the fit of the overall model is examined based on the GOF criterion. According to the average shared values of the constructs (shared values of the first order constructs) and the average R2 of all the endogenous constructs of the model, the GOF value for the overall fit of the current research model is equal to:

$$GOF=\sqrt{(\overline{communalities})*(\overline{R^2})}= \sqrt{(0.334*0.835)}= 0.528$$

According to the three criterion values introduced as 0.01, 0.25, and 0.36 as weak, medium and strong (Davari and Rezazadeh, 2013), obtaining a value of 0.528 for GOF indicates a strong fit of the research model. The following results of structural equation modeling for the impact of stakeholders' perception on tax compliance in order to participate in corporate sustainability reporting are presented in Table (9) and Figures 1 and 2. The path coefficient of the direct effect of stakeholders on tax compliance in order to participate in corporate sustainability reporting is equal to 0.177 and the t value is equal to 2.179. Because the value of t is greater than 1.96, the null hypothesis is rejected. Therefore, it is concluded that the components related to stakeholders' perception lead to (positive effect of) tax compliance to participate in corporate sustainability reporting. The results of these assumptions are in agreement with the theoretical foundations presented in the research of Avi-Yona (2008), Christensen and Murphy (2004) and Rose (2007). To obtain favorable results in this complex business environment and to survive in the competitive world, the company has developed its policies, strategies, and operations and established procedures that go beyond protecting the interests of shareholders. To protect the interests of all stakeholders, the company plans to pay attention to ethical considerations and finally be able to participate in corporate sustainability reporting with tax compliance.

Table 11. The structural equation modeling results for the first hypothesis

Path	P-value	t-value	Standard coefficient	Test result
Components related to stakeholder perception --------> Support for sustainability reporting	0.030	2.179	0.177	Confirmed

Next, the path coefficient of the direct effect of social norms on tax compliance to participate in corporate sustainability reporting in Table (10) is equal to 0.358 and the value of t is equal to 3.641. Because the value of t is greater than 1.96, the null hypothesis is rejected. Therefore, it is concluded that the components related to social norms lead to (positive effect of) tax compliance to participate in corporate sustainability reporting. The results of these hypotheses are in agreement with the theoretical foundations presented in the research of Bobek and Hatfield (2003), Bobek et al. (2007), Davis et al. (2003) and Wenzel (2005). Social norms or value orientations are among the most common social psychological variables. With a proper understanding of business, this component leads to tax compliance and participation in corporate sustainability reporting.

Table 12. The structural equation modeling results for the second hypothesis

Path	P-value	t-value	Standard coefficient	Test result
Components related to social norms --------> Support for sustainability reporting	0.000	3.641	0.358	Confirmed

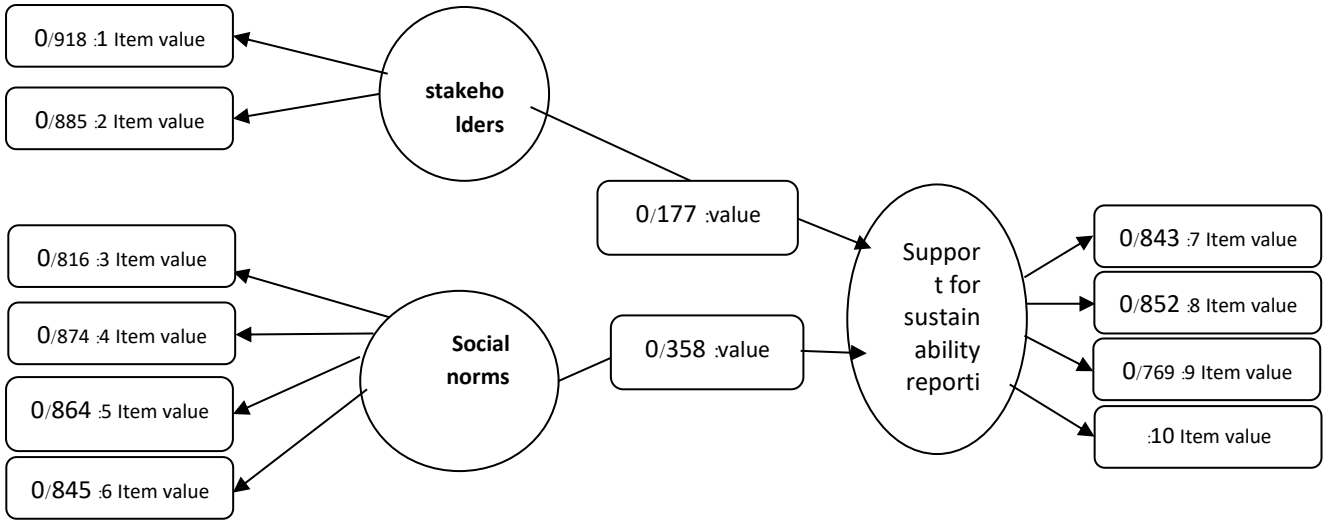

Figure 1. Path coefficients and factor loads of the influence model of stakeholders and social norms on tax compliance to support the sustainability report

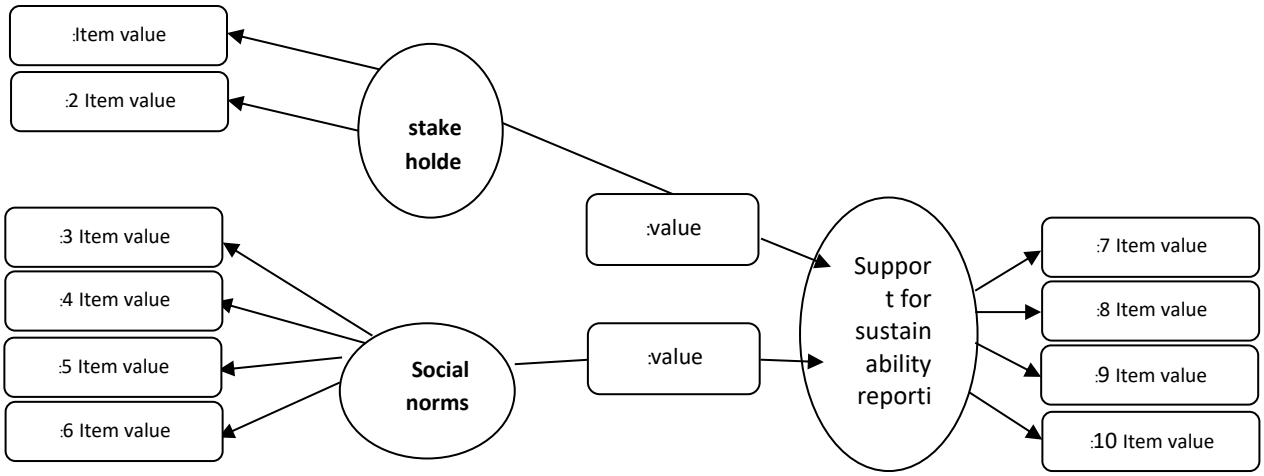

Figure 2. The significance level of the model of the influence of stakeholders and social norms on tax compliance to support the sustainability report

5. Discussion and Conclusion

Paying attention to ethics and stakeholders in the accounting and auditing profession is vital for society. So, compliance with ethical and social behavior and standards can be the core reason for the profession's existence. In this regard, if the social, moral and beneficiary characteristics are not paid attention to, the profession will face the issue of legitimacy and, ultimately, economic consequences, including tax non-compliance and non-participation in sustainability reporting. Since the impact of social norms and stakeholders on tax compliance was investigated in this paper to support the sustainability report, the components related to social norms and stakeholders were first identified. The results of structural equation modeling confirm the impact of stakeholders' perception on tax compliance to participate in corporate sustainability reporting. In other words, the components related to stakeholders' perception lead to (positive effect of) tax compliance to participate in corporate sustainability reporting. The results of this hypothesis are in line with the theoretical foundations

presented in the research of Avi-Yona (2008), Christensen and Murphy (2004), Ostas (2004), and Rose (2007). To obtain favorable results in this complex business environment and survive in the competitive world, the company has developed its policies, strategies, and operations and established procedures beyond protecting the interests of the shareholders. To protect the interests of all the beneficiaries of the program, the company aims to pay attention to ethical considerations and to finally be able to participate in corporate sustainability reporting with tax compliance. Also, the structural equation modelling results confirm social norms' impact on tax compliance to participate in corporate sustainability reporting. In other words, the components related to social norms lead to (positive effect of) tax compliance to participate in corporate sustainability reporting. The results of these hypotheses conform with the theoretical foundations presented in the research of Bobak and Hatfield (2003), Bobak et al. (2007), Davis et al. (2003) and Wenzel (2005). Social norms or value orientations are among the most common social psychological variables. With a proper understanding of business, this component leads to tax compliance and participation in corporate sustainability reporting.

After conducting any research, the effort is to ensure that the results have consequences for the stakeholders and those interested in making decisions efficiently and effectively. Therefore, this research will not be an exception to this. From the results of this research, groups such as investors, capital market financial analysts, stock exchange managers and brokers, financial managers and management accountants, government and legislative institutions, independent and internal auditors, professors, students, scholars and interested researchers will benefit One of the consequences of the results of this research can be used for the accounting standards development committee or the stock exchange organization. Companies can be prescribed to observe the role of their tax compliance through social, ethical, and stakeholder dimensions to support the sustainability report. Analysts use the results of this research, which leads to providing a new approach in the direction of corporate sustainability for all stakeholders. This research shows the extent of the obligations of managers and owners of companies in front of society and other stakeholders. On the other hand, it will determine the demands of the people and different stakeholders from the company managers.

According to the results, managers should improve their attitude toward tax compliance and sustainability reporting by developing training programs, creating a suitable structure, and raising the organizational culture. It is also suggested to the managers to increase the willingness to tax compliance and sustainability reporting by making the required resources available without affecting the interests of the shareholders. It is also suggested to the legislators and standard drafting committees to follow up on tax compliance for sustainability reporting (although this issue is voluntary in Iran) to improve the behavior of economic units through the formulation of standards and the inclusion of ethical components in the code of professional conduct. In addition, future studies suggest that other components, such as fairness, managers' attitudes, and complexity of tax laws (level of managers' understanding of tax laws), should be analyzed at the level of the entire country and other cities and provinces.

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RESEARCH ARTICLE

The Role of Sukuk in the Economic Growth of Islamic Countries: An Approach to the Absorption of Liquidity Available in Iran

Javad Mohammadi, Ahmad Ghasemzadeh Khosroshahi*

Department of Financial Engineering Management, Tabriz Branch, Islamic Azad University, Tabriz, Iran

Maryam Khalili Araghi

Department of Accounting, Tehran Branch, Islamic Azad University, Tehran, Iran

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Abstract

Capital is considered the engine of economic growth and development in all economic growth theories and models. Therefore, providing direct financing and attracting enough capital to implement economic plans is one of the most critical concerns of economic decision-makers in every society. By understanding this issue, compilers of Iran's economic development programs have stated that one of the crucial goals in the country is to provide the necessary grounds for developing monetary and financial markets. Currently, there are many financing tools in the world, most of which cannot be used in Islamic societies due to their nature of usury. The data from 2001 to 2018 for selected countries were extracted from WDI, ICRG, and IIFM databases and analyzed through the econometric method. The results showed a positive and significant effect of Sukuk issuance on the economic growth of Islamic countries. In the end, implications were made to attract liquidity using this tool. In Iran, the role of Sukuk on economic growth has not been investigated, and the critical point is that in this research, the data related to economic risk and political risk have been used and simultaneously, along with other variables, its effect on economic growth has been evaluated and analyzed.

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*Corresponding Author:
Ahmad Ghasemzadeh Khosroshahi
Email: khosroshahi@iaut.ac.ir
Tel: 09141164011
ORCID:

1. Introduction

Financial markets are considered due to their essential role in gathering resources through small and large savings in the economy, optimizing financial circulation, and directing them towards productive economic sectors' expenses and investment needs. The positive effects of the stock market on economic growth, increasing investment motivation, reducing liquidity risk, and equipping and mobilizing deposits are so great and sensitive that some economists think that the difference between developed and undeveloped economies is not in advanced technology but in the existence of integrated, active and extensive financial markets. Sukuk is a newly emerging component of the financial system of the Islamic world. It is a new class of Islamic financial instruments designed based on contracts with a flexible structure and is an alternative source of financing (Ali, 2020). The development of the Sukuk market is an integral part of the financial development of an Islamic country through the financing of projects and the development of infrastructure. These bonds are a means of increasing the government budget through the issuance of government Sukuk, a source of financing for companies through the issuance of corporate Sukuk, and a way to finance with foreign currencies (Al-raeai et al., 2019).

Due to the prohibition of usury, Muslims are forbidden to use bonds. Therefore, Sukuk is made in a way consistent with Sharia's principle and spirit to achieve desirable economic goals. These bonds are used to invest in tangible assets for production and investment purposes, and the resulting profit is the basic principle of Islamic financing (IIFM, 2018). Sukuk can attract the savings of Muslims who do not want to invest in interest-based bonds because bonds contain usury (interest), which is prohibited by the principles of Islamic law. This can lead to an increase in financial participation and thus stimulate investment and economic growth. Without Sukuk certificates, savings will not be used effectively and, therefore, will not be directed to the formal financial sector (Smaoui and Nechi, 2017). In the capitalist system that is common in the world today, for large projects that require large capital and generate huge profits or income, the issuance of documents is based on bonds, and the owners of these documents are nothing but claimants based on interest from the owners of these projects. This is while Sukuk is designed so bondholders can participate in real economic activities jointly, and the profits from these activities are distributed among bondholders after deducting operating costs. Therefore, bonds are structured as debt instruments with fixed interest. The amount of bond interest is determined as a percentage of the capital and not as a percentage of the actual profit. Financial markets expand economic growth through optimal capital accumulation, improved resource allocation, and technological innovation (Thumrongvit et al., 2013). It is well proven that financial development leads to extensive economic growth today.

This growth is possible through selecting forward-looking entrepreneurs and high-yield projects, mobilizing external financial resources, diversifying risk and participating in innovation (King and Levine, 1993a, 1993b; Wachtel, 2001). The growth and development of the Sukuk market in the last few years in the world is mainly due to its role in liquidity control, and liquidity management at the macro and micro level is one of the factors that can cause the development of Islamic financial markets (Hassanzadeh and Ahmadian, 2012). Financial development and economic growth studies show that increasing access to financial instruments and institutions will reduce the cost of information and exchanges and cause economic growth. The effect of financial development on economic growth will not be the same among all countries, but it depends on countries' financial development level. In countries with a low level of financial development, this effect will be uncertain and may be positive, zero, or even negative (Seifipour, 2010). If the national currency of Iran is weakened compared to other currencies, it is because of the inflation in the society, which is also caused by the growth of liquidity. Economic experts believe that one of the most important ways to

get rid of the current situation is to pay attention to the issue of domestic production. The creation of production capacity leads to job creation and an increase in people's income and compensation for the decrease in the value of the national currency. If there is production in the national economy to increase the supply of goods, there should be no fear of liquidity growth. Liquidity growth leads to inflation if it increases without support. For example, if the price of essential goods or housing is expanding, the reason is the lack of supply according to the needs of the society. Table 1 shows the country's liquidity situation until June 2021.

Table 1. The balance of some major monetary and credit variables at the end of June 2021 (thousand billion rials - percentage - percentage unit) (Source: Central Bank of the Islamic Republic of Iran, Department of Economic Studies and Policies - Department of Monetary Statistics).

Liquidity	Liquidity according to factors affecting supply	26571.700	34761.700	37054.000	39.400	6.600	39.400	6.600
	Net foreign assets	5121.500	5877.500	6669.900	30.200	13.500	5.800	2.300
	central bank	3669.100	4703.700	4790.900	30.600	1.900	4.200	0.300
	Banks and credit institutions	1452.400	1173.800	1879.000	29.400	60.100	1.600	2.000
	Net domestic assets	21450.200	28884.200	30384.100	41.600	5.200	33.600	4.300
	Internal demands	18031.000	24566.500	26954.500	49.500	9.700	33.600	6.900
	Net claims from the government	2733.900	3137.700	3840.800	40.500	22.400	4.200	2.100
	central bank	108.400	-495.500	108.500	0.100	121.900	0.000	1.800
	Banks and credit institutions	2625.500	3633.200	3732.300	42.200	2.700	4.200	0.300
	Net claims from government institutions and companies	414.100	415.100	526.200	27.100	26.800	0.400	0.300
	central bank	285.900	270.700	299.700	4.800	10.700	0.000	0.100
	Banks and credit institutions	128.200	144.400	226.500	76.700	56.900	0.400	0.200
	Claims from the non-governmental sector	14883.000	21013.700	22587.500	51.800	7.500	29.000	4.500
	Net of other items	3419.200	4317.700	3429.600	0.300	-20.600	0.000	-2.600
	Liquidity according to constituent components	26571.700	34761.700	37054.000	39.400	6.600		
	Money	5020.500	6909.600	7261.900	44.600	5.100	19.9%	19.6%
	Banknotes and sukuk in the hands of individuals	578.000	735.000	715.000	23.700	-2.700	2.1%	1.9%
	Visual deposits	4442.500	6174.600	6546.900	47.400	6.000	17.8%	17.7%
	pseudo money	21551.200	27852.100	29792.100	38.200	7.000	80.1%	80.4%
	Savings loan	1539.800	2268.200	2292.300	48.900	1.100	6.5%	6.2%
	short term	7555.600	10149.200	10709.400	41.700	5.500	29.2%	28.9%
	one year old	11856.500	11001.400	10679.000	-9.900	-2.900	31.7%	28.8%
	Biennial	42.400	3727.300	5298.900	#	42.200	10.7%	14.3%
	three years	0.500	0.300	0.200	-60.000	-33.300	0.0%	0.0%
	four years	4.200	4.000	4.000	-4.800	0.000	0.0%	0.0%
	five years	77.400	62.800	63.600	-17.800	1.300	0.2%	0.2%
	Other	474.800	638.900	744.700	56.800	16.600	1.8%	2.0%

As can be seen in the above table, the volume of liquidity at the end of June 2021 reached 3705 thousand and 400 billion tomans, which in the twelve months ending at the end of June 2021 has grown by 39.4% and compared to the growth of the same period last year, which was 34.2, showing an increase of 5.2 percentage points. Considering the total volume of liquidity in Iran's economy at

the end of 1978, which was about 258 billion tomans, the volume of liquidity has increased 14 thousand times over the past 42 years, which is very dangerous.

Since a lot of money increases people's demand for goods and services, if there is not enough domestic production, it leads to an increase in prices and inflation in society and the weakening of the vulnerable section. Therefore, due to the bank-centeredness of the country's economy and the creation of liquidity by banks through the provision of facilities and the amount of available liquidity towards false markets, which is rooted in the axis of the economy, the best way for the country's economy is to pay attention to the capital market and offer different types of Sukuk to attract liquidity and direct the existing liquidity towards productive activities like the economy of advanced countries. The innovation of the present research can be expressed in this way in the domestic and foreign research about Sukuk and its effect on economic growth; for some reason, Iran was not used in the statistical population of the study, which led to the country's weakness being unknown in comparison with prominent countries in this field. Therefore, while collecting the statistics of Sukuk published by Iran and analyzing it in the statistical community, we point out the country's weakness in issuing this type of bond. While comparing it with prominent countries in this field, we intend to use Sukuk as one of the most important financing tools to attract liquidity in the country. This way, policymakers, while compensating for the country's backwardness in issuing these bonds in comparison to prominent countries such as Malaysia and the UAE, can create the necessary infrastructure and direct the existing liquidity towards production by using this financing tool. Moreover, since considering various risks in investment is one of the determining factors in its success, the risks in investment have been undervalued in the research. Hence, in this research, inspired by Smaoui and Nechi's (2017) research, only the impact of the risk of laws and regulations on economic growth has been analyzed. In this research, data related to economic risk and political risk have been used. Simultaneously, along with other variables, their effect on economic growth has been evaluated and analyzed.

Aliakbari et al. (2022) show that Sukuk significantly affects the economic growth of agriculture and industry, unlike the service sector.

Yani et al. (2022) have been investigated in Indonesia, and the results show the positive effect of Islamic shares, Sukuk, Islamic investment funds and exchange rate on the economic growth of this country.

Yuliani et al. (2022), by using the generalized least squares test of the variables of GDP per capita, Sukuk, rule of law, freedom of trade, government spending, etc., from 2006 to 2018 in the five countries of Indonesia, Malaysia, the United Arab Emirates, Bahrain and Saudi Arabia, where the results show that there is a positive and significant relationship between the issuance of sukuk and economic growth.

Orhan and Tirman (2021) using the econometric method and the ARDL-BOUND test, economic growth variables, Sukuk, bank credit, inflation, government spending, etc., from 2010 to 2019, the results show that unlike the Sukuk issued by the private sector, the issuance of bank and treasury Sukuk has a positive and significant effect on the economic growth of this country.

Tan and Shafi (2021), using the econometric method of corporate Sukuk variables, GDP per capita, bonds, stock market value, stock market turnover, real savings and employment growth rate, have been examined from 1998 to 2018. The results show that in the long term, the development of the stock market can lead to economic growth. One of the limitations of this research is the consideration of corporate Sukuk as one of the independent variables and the exclusion of government Sukuk, which accounts for the largest volume of Sukuk issuance.

2. Theoretical Principles and Hypothesis Development

2.1 Economic growth

Various indicators can measure economic growth, but gross domestic product (GDP) changes are the most common. This index may also be calculated per capita, which in some way indicates the changes in the welfare level of the people of the society, which is a sign of economic growth if the situation improves.

By examining the empirical studies carried out regarding the factors affecting the economic growth of countries, it is possible to determine the capital, development of financial markets, labor force, technology and other factors such as the efficiency of production factors, macroeconomic policies, research and development, trade development, the quality of laws and regulations. He mentioned the factors affecting economic growth. Economic growth is one of the most important indicators of a healthy economy, which increases people's living standards through a positive effect on national income and employment levels. An increase in economic growth means an increase in the production of goods and services, which leads to a rise in the level of employment, an increase in the country's wealth tax revenues, a reduction in the budget deficit, technological progress, an increase in exports and an improvement in the country's balance of payments in a certain period. The driving engine of this growth is the existence of sufficient and necessary capital, as well as the existence of developed financial markets to direct capital towards production.

2.2 Sukuk

The term Sukuk is derived from the Arabic word saq, which means a check, debtor's note, promissory note, or debt bill. It is defined as Islamic bonds. In 2005, the Islamic Financial Services Committee also described Sukuk as follows: "Certificates that show the common ownership of bondholders in the undivided part of the underlying asset, to which all rights and obligations are linked to that underlying asset." A more precise definition of Sukuk shows that these papers represent an asset or investment ownership. These bonds are financial asset-backed securities that must have value and cannot be profitable based on speculative and speculative activities and activities that take place without creating value and work (Al-Raeai et al., 2019). Sukuk attracts financial resources with the support of balance sheets and physical assets by converting assets into securities and using them to make investments. There are different classifications related to Sukuk, some of which are mentioned below:

2.3 Classification based on the type of publisher (sovereign, semi-sovereign, corporate, financial institution)

A criterion for classifying Sukuk is the issuer issuing Sukuk, a government, quasi-government, corporate or financial institution such as a bank. This issue is shown in the diagram below (Figure 1).

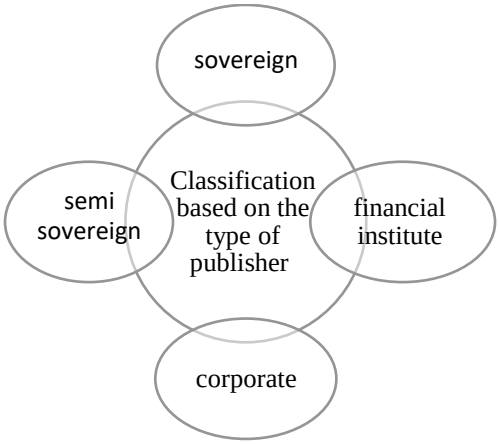

Figure 1. The Classification of Sukuk is based on the type of publisher (source: Mohammadi et al., 2015).

2.3.1 Sovereign bonds

The government issues them and their maturity may be short-term, medium-term or long-term; the government issues these bonds to cover the budget deficit or provide the capital needed for special or general construction projects. Government Sukuk provides an alternative source of capital for the government; depending on the government's requirements, it can be issued domestically or internationally.

2.3.2 Semi-sovereign bonds

These are issued by institutions and agencies (state-owned companies or publicly-owned companies) with government backing. These bonds are usually explicitly or implicitly guaranteed by the government. According to the Sukuk outlook and forecast, governments are the most active issuers in the history of the global Sukuk market, and Malaysia is considered the leader in this market.

2.3.3 Corporate bonds

are issued by a country's private sector (corporate sector). The purpose of issuing this type of Sukuk is to finance working capital, finance projects, or finance the development of a company's business.

2.3.4 Financial institutions Sukuk

These are bonds issued by financial institutions such as banks, credit financial institutions, etc.

2.4 Classification of sukuk bonds based on the place of issuance (domestic or international)

2.4.1 Domestic Sukuk

It is a Sukuk issued by the public or private sector in the current currency of a country, and domestic investors of the same country generally purchase such Sukuk. Until the end of 2019, the largest domestic market issuer of Sukuk was Malaysia, which had taken first place worldwide by offering 660.565 million dollars of domestic Sukuk (IIFM, Sukuk report, 2020).

2.4.2 International Sukuk

Sukuk is a Sukuk issued in international markets with a globally accepted currency (generally dollars or euros). The purpose of issuing this Sukuk is to finance and attract capital from international investors. In recent years, Sukuk has been widely accepted internationally, and international Sukuk issuers and investors are expanding. Today, the largest international issuer of Sukuk is the United Arab Emirates, which has taken first place in the world by offering 80.364 million dollars of

international Sukuk (IIFM, Sukuk report, 2020).

2.4.3 Global Sukuk

The total of domestic and international Sukuk forms global Sukuk.

Table 2 shows the number and volume of Sukuk issued by different countries.

Table 2. The Global Sukuk statistics were issued until 2019 (Sukuk Report, 2020).

Asian and East Asian countries	Sum (million dollars)	Number	percentage of the total
Bangladesh	6	59	0.000%
Brunei	173	10,949	0.880%
China	1	97	0.010%
Hong Kong	5	3,196	0.260%
Indonesia	490	98,908	7.930%
Japan	3	190	0.020%
Malaysia	7,090	733,748	58.830%
Maldives	2	10	0.000%
Pakistan	98	17,630	1.410%
Singapore	16	1,498	0.120%
Sri Lanka	2	5	0.000%
Total	7,886	866,290	69.460%
The countries of the Persian Gulf Cooperation Council and the Middle East	Sum (million dollars)	Number	percentage of the total
Bahrain	437	33,735	2.700%
Jordan	4	483	0.040%
Kuwait	20	4,458	0.360%
Oman	13	6,188	0.500%
Diameter	53	33,667	2.700%
Saudi Arabia	217	146,291	11.730%
Emirates	140	88,688	7.110%
Yemen	2	253	0.020%
Total	886	313,763	25.160%
African countries	Sum (million dollars)	Number	percentage of the total
The Gambia	429	407	0.030%
Ivory Coast	2	460	0.040%
Nigeria	5	864	0.070%
Mali	1	285	0.020%
Morocco	1	105	0.010%
South Africa	1	500	0.040%
Senegal	2	445	0.040%
Sudan	36	19,646	1.580%
Togo	1	245	0.020%
Total	478	22,957	1.840%
European countries and others	Sum (million dollars)	Number	percentage of the total
France	1	1	0.000%
Germany	3	206	0.020%
Luxembourg	3	280	0.020%
Kazakhstan	1	77	0.010%
Turkey	585	40,544	3.250%
United Kingdom	10	1,719	0.140%
America	5	1,367	0.110%
Total	608	44,194	3.540%
total sum	9,858	1,247,204	100.000%

The number of Sukuk issued by Iran from 2001 to the end of 2019 is 70.974 million dollars.

2.5 Explaining the relationship between Sukuk and economic growth

In the country of Iran, despite the existence of sufficient capital and a huge amount of liquidity, due to the lack of proper use of Islamic financial instruments, the available liquidity that should be directed towards production and creating employment has moved towards false markets, which can be done with proper planning and optimal use of Islamic financial instruments created a huge transformation in the economy. Despite the potential inside the country and the existence of more than 30,000 million dollars of domestic currency (there are no official statistics in this regard, but the mentioned amount is the estimate provided by most economic experts), Iran has only been able to offer 70.974 million dollars of Sukuk (over-the-counter site) and 2.000 million euros of international Sukuk (Khansari, 2017) until the end of 2019. Abdullah and Nayan (2020) consider the attraction of foreign investors and their confidence in expanding the use of this tool for the construction and development of renewable power plants in Malaysia as an important factor in the success of this financing tool. The type of financing for the project is green financing. Its main focus is on the issues of environmental protection and social responsibilities, which, through Sharia-compliant investments, the investor earns a good profit in addition to meeting the country's needs. Smaoui and Ghouma (2020) found that the freedom of trade and increased liquidity of banks in the use of Sukuk due to less volatility and better dynamics provided various benefits for the diversification of banks' debt securities (left side of the balance sheet), which is positively and significantly related to capital Banks. Al-Raeai et al. (2019) showed that macroeconomic factors and political risk influence the issuing of Sukuk. The amount of savings, exchange rate, freedom of trade, banking system, stock market, credit risk and budget deficit are influential factors in the issuance of Sukuk. Still, a higher level of uncertainty was observed between political risk and the development of the Sukuk bond market. Wong and Bhatti (2019) stated that because a low percentage of the population of East Asian countries are Muslims, to develop international Sukuk bonds in East Asia, it is possible to issue international Sukuk and sell it to the people of Muslim countries in the Middle East. This is due to the Muslim people's appropriate reception of the mentioned Sukuk due to its lack of usury nature. Smaoui and Nechi (2017) showed that the growth of the Sukuk market leads to economic growth, even after controlling for various measures in the development of the financial market, institutional quality, and classical factors that determine economic growth. Said and Grassa (2013) showed that macro factors such as GDP per capita, Muslim population, economy size, the degree of openness of the economy and the quality of regulation have effectively developed the Sukuk market. However, the global financial crisis in 2008 greatly influenced it. The development of this market has had a negative impact. Thumrongvit et al. (2013) showed that the development of the stock market stimulates and strengthens economic growth and that government bonds positively affect economic growth. Naimi et al. (2018) found that the issuance of Sukuk positively and significantly affects the GDP and causes economic growth. Khansari (2014), by introducing Sukuk per Basel 3, specified that using this instrument makes it possible to meet capital requirements in the 3 agreement and strengthen banks' capital. In this research, the use of this tool to enter the international space of Islamic banking is emphasized, and some of Sukuk's advantages in the banking system are explained. Lashkari and Arjamandi (2010) found that Sukuk can be a suitable tool for risk management and liquidity control if the necessary infrastructure is provided, including facilitating the rating and issuance of bonds, as well as creating suitable secondary markets for the purchase and sale of bonds, the conditions for the growth and expansion of the financial system and as a result, the country's economic system can be provided. Mousaviyan et al. (2009) found that Mudarabah bonds are a suitable tool for financing the export sector from the point of view of jurisprudence and economics, and the activists of the export sector can use these bonds to fill the lack of resources necessary for financial and credit support of

exporters. Mousaviyan (2016) concluded that farm and Musakat contracts are legitimate contracts from a jurisprudential point of view and are legally based on Iran's civil and ordinary laws, so there is no need to establish a new legal and jurisprudential unit to design documents based on them. Also, due to the profitability of farm bonds, it is expected that if there are legal institutions and government support for these bonds, a secondary market will be formed and the liquidity of Sukuk bonds will be found to be a suitable tool for attracting liquidity in the hands of people and directing them towards projects. They are production and construction that help economic growth. According to the stated theoretical foundations and background, the hypothesis of the research is proposed as follows:

Research hypothesis: Sukuk bond issuance leads to Islamic countries' economic growth.

3. Research Method

3.1 Statistical population

The statistical population was selected as a panel and included primarily Islamic countries. Secondly, from 2001 to 2018, more than 15 million dollars of Sukuk bonds were issued, including Malaysia, Iran, Bahrain, Indonesia, Pakistan, Qatar, Saudi Arabia, UAE and Turkey. According to the IIFM Sukuk report (2020), the mentioned countries account for about 96% of all Sukuk bonds issued worldwide. Because these bonds are not usurious, they are accepted by the people of Islamic countries, so it is possible to develop them in Islamic countries, unlike bonds.

3.2 Research model and methodology

In this research, the following model is investigated and estimated (Equation 1 and Table 3).

$$gdpp_{it} = \beta_0 + \beta_{1i} oilr_{it} + \beta_{2i} saving_{it} + \beta_{3i} m\exp ort_{it} + \beta_{4i} nincome_{it} + \beta_{5i} \exp ortgs_{it} + \beta_{6i} Goverments cons + \beta_{7i} glsukuk + \beta_{8i} ecorisk + \beta_{9i} pporisk_{it} + e_{it}$$

where

GDPP: Gross domestic product per capita

Oilr: oil revenue (percentage of GDP)

Saving: domestic savings (percentage of GDP)

Mexport: export of manufactured goods (percentage of exports)

Nincome: national income per capita (percentage of growth)

Exportgs: export of goods and services (annual percentage growth)

Governmentcons: Government consumption expenditure (annual percentage)

Glsukuk: Total Sukuk

Ecorisk: economic risk

Porisk: political risk

β_{ii} : estimated coefficients

e_{it} : Error component

i: It represents the place that Islamic countries in this research

T: represents the period from 2001 to 2018.

Using these variables is inspired by Smaoui and Nechi's (2017) research. In addition, the full description of the variables is mentioned in the research results section.

Table 3. The description of variables (source: research findings)

Variable	Sign	Expected sign	Source
GDP per capita (current US$)	GDPP	Na	WDI
Exports of goods and services (annual % growth)	Exportgs	+	WDI

General government final consumption expenditure (current US$)	Governmentcons	+	WDI
Manufactures exports (% of merchandise exports)	Mexport	+	WDI
Cross domestic saving (%gdp)	Saveing	+	WDI
Adjusted net national income per capita (annual % growth	Nincome	+	WDI
Oil rents (% of GDP)	Oilr	+	WDI
Economic risk	Ecorisk	–	ICRG
Political risk	Porisk	-	ICRG
Global Sukuk bonds	Glsukuk	+	IIFMSUKUK

4. Findings

4.1 Descriptive statistics

This section calculated descriptive statistics indices, including central indices (maximum, minimum, mean) and dispersion indices, including standard deviation (Table 4).

Table 4. The Descriptive data (source: research findings)

Variable	Mean	Standard deviation	Minimum	Maximum
Oilr	13.556	14.344	0.036	54.260
Gdpp	1.486	3.964	-15.151	11.868
Saveing	38.362	15.811	5.782	75.549
Mexport	35.889	30.846	0.052	85.537
Nincome	13934.420	14416.400	436.516	58415.590
Exportgs	5.152	8.796	-25.736	41.337
Governmentcons	4.500	4.380	1.550	1.970
Glsukuk	6974.260	16730.200	0.000	122421
Firisk	40.146	4.495	25.580	48.210
porisk	64.310	10.119	44.290	79.330
ecrisk	38.806	5.753	23.290	50.000

4.2 Stationary test

Levin Lin Chiu's unit root test results for the variables are as follows: the variables are stationary (Table 5).

Table 5. The Levin-Lin-Chu stationary test (source: research findings)

Variable	T-student	Significance Statistic
Gdpp	-3.859	0.000
Oilr	-3.810	0.000
Saveing	-1.762	0.039
exportgs	-5.151	0.000
Mexport	-2.993	0.001
nincome	-3.518	0.000
Governmentcons	-1.967	0.024
glsukuk	-1.788	0.036
Ecrisk	-3.378	0.000
Porisk	-4.057	0.000

4.3 Model diagnosis test

We use the F-Limer test to choose between pool and panel models. The results show that the significant statistical value of 1.04 is not in the critical area (greater than 5%), so the null hypothesis that the estimate is pooled is confirmed and the opposite hypothesis that it is a panel is rejected (Table 6).

Table 6. F-Limer test, Hausman test, The Wooldridge autocorrelation test, The Adjusted Wald

heteroskedasticity variance test (source: research findings)

Tests	F and Chi2	Prob
F-Limer test	F (8, 144) = 1.040	0.405
Hausman test	Chi2(7) = 8.410	0.297
The Wooldridge autocorrelation test	F (1, 8) = 4.134	0.076
The Adjusted Wald heteroskedasticity variance test	Chi2 (9) = 408.180	0.000

4.4 Hausman test

The results show that the significant statistic of 8.41 is not in the critical area (more than 5%) in the Hausman test; if the panel estimation method is confirmed, the estimation should be done with random effects (Table 6).

4.5 Autocorrelation test

Wooldridge test is used to test autocorrelation in panel data. Using the Wooldridge test, it is possible to find the existence of autocorrelation between variables, and the null hypothesis indicates the absence of autocorrelation. According to what is presented in the table, the significant statistic is more than 5%, which indicates the absence of autocorrelation in the model (Table 6).

4.6 Variance heterogeneity test

Examining the statistical values of the conducted tests shows that the null hypothesis of equal variance is rejected; therefore, there is a problem of heterogeneity of variance in the model (Table 6). According to the research results, it is necessary to use the method (panel with random effects) or GLS to estimate the model to solve variance heterogeneity (Table 7).

Table 7. The GLS (Generalized least square) estimation (source: research findings)

Variable	Coefficient	Standard deviation	t-student	Significance statistic
Oilr	0.043	0.020	2.160	0.031
Saveing	0.102	0.026	3.820	0.000
Exportgs	0.172	0.022	7.840	0.000
Mexport	0.024	0.010	2.260	0.024
Nincome	0.000	0.000	5.390	0.000
Governmentcons	1.550	4.970	3.270	0.001
Glsukuk	0.000	8.650	3.000	0.003
Porisk	-0.110	0.030	-3.630	0.000
Ecrisk	-0.143	0.067	-2.130	0.340
Cons	-1.269	-1.269	-0.600	0.547

4.7 Findings

Oil revenues have positively and significantly affected GDP per capita with a coefficient of 0.0435885. The main reason for this is the presence of most oil-rich countries in the statistical community, which are among the world's leading exporters. According to the World Bank, this variable is "the difference between the value of crude oil production at world prices and the total cost of production". Foreign exchange earnings from oil exports can positively affect production and economic growth by increasing capital and intermediate goods imports.

Domestic savings with a coefficient of 0.1024787 have positively and significantly affected GDP per capita. People's savings can be invested later and generate more income for them. Savings and their amount are among the factors that indicate the level of development of societies. Like Solow's model, saving is one of the most important production growth factors in neoclassical growth models.

The export of goods and services has had a positive and significant effect on the GDP per capita,

with a coefficient of 0.1729465. This index shows the annual growth of the dollar value of exports of goods and services to other parts of the world, including commercial goods, commercial services, government, finance, construction, transportation, etc. The increase in the export of goods and services will lead to an increase in the gross domestic product due to currency gain and employment growth. Undoubtedly, the annual growth of exports and goods in the service sector can also increase economic growth. If the production of goods and services increases in a country, it can be said that economic growth has occurred in that country.

The export of manufactured goods has had a positive and significant effect on the GDP per capita, with a coefficient of 0.0241916. According to the standard classification of international trade, this index includes goods in the chemical sector (including hydrocarbons, alcohol, nitrogen, mineral dyes, pharmaceutical products, chemical fertilizers, disinfectants, etc.), raw materials for special industries (including cloth, paper and cardboard, leather, glass and glass containers, iron, steel, etc.), transportation machinery and equipment (including electricity generation machinery and equipment, agricultural machinery, cooling and heating equipment, communication equipment, ship and boat construction, etc.) and Other manufactured goods (including prefabricated buildings, weapons and ammunition, stationery, jewellery, travel goods, household appliances, etc.) The importance of export and its role in developing countries' economies is not hidden from anyone. One of the foundations of the economic growth of developing countries has been to pay attention to the development of exports. The importance of exports can be analyzed from different aspects. No country can consider itself unnecessary to export goods because the era of a closed economy has passed. Exporting can improve the economic situation in various ways; among the essential factors the following can be mentioned: improving the quality of manufactured goods, achieving production on an economic scale, increasing employment, providing foreign exchange income, and increasing economic growth and development.

The national income per capita has had a positive and significant effect on the GDP per capita, with a coefficient of 0.0001245. This index shows the net income of each person in a country, such as the wages of workers and employees, income from providing services, income from renting real estate, etc., after deducting taxes and related expenses. An increase in income leads to more savings and, of course, investment.

Government consumption expenditure has positively and significantly affected GDP per capita with a coefficient of 1.550. Suppose it leads to the redistribution of income among the lower-income deciles. In that case, more government spending can positively affect GDP per capita, provided governments can adopt appropriate policies and do them correctly.

The economic risk with a coefficient of 0.1438176 has negatively and significantly affected GDP per capita. This risk is related to the general economic situation and conditions. It includes a sudden increase in production costs, the lack of productivity of invested foreign funds, a sudden decrease in a country's trade balance, etc. Therefore, the countries examined in this research have a high economic risk, and the negative relationship between this risk and economic growth is negative.

The political risk with a coefficient of 0.1105131 has negatively and significantly affected GDP per capita. This risk includes the instability of the government and socio-economic conditions, the poor outlook and perspective of investment in the country, internal conflicts, external conflicts, corruption, the involvement of military forces in the government, religious tensions, weak implementation of laws and social order, ethnic tensions, accountability The democratic weakness of the government is the quality of bureaucracy (Abdi and Drinogurani, 2014). Political efficiency indicates the optimal administration of a country. The countries investigated in this research have a high political risk.

Sukuk has positively and significantly affected GDP per capita with a coefficient of 0.000026. This variable positively and significantly affects economic growth at 95%. The low coefficient of

Sukuk supply on economic growth is the low volume of Sukuk supply worldwide because its figure is very small compared to oil revenues. However, since this market has not found its place among Islamic countries, including Iran, and it is a newly emerging market, there is no doubt that if it prospers and expands, it will take a large share of economic growth.

5. Discussion and Conclusion

Financial markets support the economy and provide sustainable economic growth and development conditions. The government, organizations, institutions, and companies need financial resources to establish, equip, or expand their activities, and in conventional financial markets, this need is met through the issuance of bonds. Since the mentioned bonds are based on loans with interest, they are considered haram and usury from the point of view of Islam; therefore, these bonds cannot be used in Islamic countries. Considering the importance of financing, Islamic thinkers have proposed Islamic financing methods, the most important of which is the issuance of Sukuk bonds. The countries examined in this research have issued about 96% of all Sukuk worldwide.

These bonds do not deviate from the main topic of investment due to the existence of the founding entity, intermediary entity, underwriter, market maker and guarantor, and the financing and issuance of Sukuk bonds can be called one of the main and essential pillars of economic growth in Islamic countries. These countries can identify suitable investment opportunities while collecting stray funds and moving them towards economic and productive activities. Issuing Sukuk bonds, in addition to the benefits it has for companies, can also be a form of financing and compensating for budget deficits from domestic sources for governments, so they do not have to compensate for budget deficits by increasing the monetary base. Today, many investors have turned to this direction, unlike in the early years of the issuance of Sukuk bonds in the world, which were mainly institutions and financial institutions.

Developing efficient financing tools and their success in countries is essential for economic growth and development. These tools are responsible for directing cash flow towards productive economic activities and are of great importance for the economy of countries. On the one hand, it has allowed the companies and institutions that provide financing, in addition to continuing economic activity through short-term financing, to develop activities through long-term financing. On the other hand, it also gives small and large investors the possibility to, in addition to participating in economic and productive activities, also receive profit from the investment or in the relevant plan as a partner, regardless of the deposit interest rate, from the profits from to benefit from the investment. The result of this work is to prevent the influx of liquidity to the false markets of dollars, housing, cars, etc., which, in addition to its role in controlling and reducing inflation, will also determine the country's economic growth. Therefore, efficient financing helps a lot in the flow of money in the economy's veins.

Unfortunately, the capital market in Iran, despite the high potential of making tools, has been unable to expand these tools to different sectors of the economy, which undoubtedly can achieve many successes in the country with some reforms in procedures and regulations. For example, by directing the flow of cash towards the construction of a refinery and not selling crude oil, the effect of oil sanctions on the country's economy is also neutralized because refined products cannot be sanctioned like selling crude oil.

The existence of a huge amount of liquidity in Iran and its inclination towards the housing, dollar and coin markets, which gives a severe blow to the society's economy, is caused by the lack of accurate information about the available investment opportunities and their returns. People tend to maintain their money's value and profit from its investment. As a result, if it is certain that their

investment in productive activities is profitable and they also maintain the value of their money, they have not invested in false markets without a guarantee. And they do not hurt the country's economy unintentionally. The lack of necessary infrastructures and proper information has caused this volume of liquidity to increase inflation, decrease the value of the national currency, and increase unemployment and delinquency in society instead of boosting production and creating employment. If there is a suitable platform and the people are assured of preserving their capital, without a doubt, this volume of liquidity will lead to a boom in production, an increase in employment, an increase in exports, an improvement in the country's balance of payments, increase in foreign exchange earnings, empowerment of domestic industries and overall enrichment of the country and the people of that society. The results of the current research show the effect of issuing Sukuk bonds on the economic growth of Islamic countries, which is in line with the results of the research of Naimi et al. (2018), who found that issuing Sukuk has a positive effect on the gross domestic product and leads to economic growth. Al-Raeai et al. (2019) found that macroeconomic factors and political risk influence the issuing of Sukuk. The results of the research of Smaoui and Nechi (2017) showed that the growth of the Sukuk market leads to economic growth, and the results of both studies are consistent. The results are consistent with Said and Grassa's (2013) research, which showed that macro factors such as GDP effectively develop the Sukuk market.

6. Implications

For years, the country's economy has been managed through oil exports, and the country's dependence on oil revenues has caused the country's vulnerability and the greed of foreigners to interfere in Iran's economy. This is even though the oil revenues are unstable, and the oil resources will eventually run out without sanctions.

Unfortunately, due to the lack of necessary infrastructure to absorb liquidity, more than 70% of the country has flocked to fake markets, and the country's economy faces many problems. Therefore, by creating the necessary infrastructure, in addition to absorbing the existing liquidity and directing it towards productive activities and the entry of the private sector into the production and export of domestic products, in addition to significantly reducing the effects of sanctions, we can also not allow the enemy to Use oil embargo to condition the country's economy. Therefore, it is possible to take inspiration from prominent countries in the field of Sukuk supply, such as Malaysia, to develop financial markets inside the country and create the necessary mechanism for domestic companies to supply Sukuk. If this happens, it will be possible to create a lot of capacities inside the country to replace oil revenues. In this way, while supporting domestic production and raising public welfare, the impact of sanctions will be diminished and help to realize a resistive economy.

In the current situation where the country's economy is faced with cruel Western sanctions, the capital market can play an undeniable role in economic growth and the transition from the sanctions era. Unfortunately, most of the facilities granted by banks are related to the service and commercial sectors, which are considered one of the main factors of inflation due to the lack of proper supervision. Therefore, taking the share of the capital market from the money market requires stubborn and error-free competition, which itself requires a plan and justification of the economic officials regarding the importance of investment.

In addition to solving the problem of the country's economy being bank-oriented, the government and law-making institutions should prepare a suitable legal framework for this and use international jurisprudence and legal consultants. Also, creating appropriate credit enhancement mechanisms, such as establishing international reliable rating institutions to rate issued bonds, benefiting from the capacity of the country's banks as guarantors of bonds, creating operational infrastructures for bond issuance, creating mechanisms for obtaining guarantees from companies to return foreign currency

from exports to the country, fostering and using expert workforce and, most importantly, culture building and promotion through mass media and informing people about the benefits of these bonds, the importance of investment and the profit from it can bring many successes in Iran.

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RESEARCH ARTICLE

The Effect of Family Ownership on the Adjustment Speed of Financial Leverage towards Optimal Leverage

Vahab Rostami*, Abdolrasoul Rahmanian Koushkaki, Ali Akbar Alahyari, Hamed Kargar

Department of Accounting, Payame Noor University, Tehran, Iran

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Abstract

Faster attainment of optimal financial leverage guarantees the company's survival and the growth of shareholders' interests. This paper investigates the effect of family ownership on the speed of adjustment of financial leverage toward optimal leverage. The data of 133 companies listed on the Tehran Stock Exchange, selected according to the systematic exclusion pattern, was collected for 10 years from 2012 to 2021 to achieve the research objectives. A multivariate linear regression model was used to test the research hypotheses. In order to measure the speed of adjustment of financial leverage, the partial adjustment pattern model of Öztekin (2015) has been used, and to evaluate the Family Ownership, Chen et al. (2008) method was used. The results showed that the speed of adjustment of financial leverage towards optimal leverage in family companies is faster than in non-family companies. Therefore, family owners in companies with a higher sense of responsibility towards the company's capital can create a safe environment for investors and ensure a return on their investment.

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*Corresponding Author: Vahab Rostami
Email: vahab.rostami@pnu.ac.ir
Tel:
ORCID: 0000-0002-9387-684X

1. Introduction

The most important task of financial managers in achieving companies' goals is to optimally combine financial resources in the capital structure (Oino and Ukaegbu, 2015). As much as companies choose an optimal combination of debt and equity in their financing methods to minimize financing costs, according to risk and return, the result of this action will be to maximize the interests of the shareholders. Therefore, it is necessary to discuss the speed of adjusting the financial leverage towards the optimal leverage because one of the main reasons for the failure of companies is insufficient investment and inappropriate financing. The speed of adjustment of financial leverage is the length of time that the company adjusts its capital structure and moves towards the optimal leverage that has already been targeted and achieved (Amin and Liu, 2020). The importance of optimal leverage is such that the growth and survival of companies depend on this factor, which affects the risk and expected returns of companies. The study of financing decisions and achieving the optimal leverage of companies is of great importance because it may affect companies' bankruptcy probability and is somehow related to the company's credit risk (Rostami et al., 2022). On the other hand, the major owners in the companies, in terms of having high voting rights, can influence the managers' decisions, especially in family companies, where the owners themselves are the managers of the companies. Family companies are essential in the economy because about 35% (175 companies) of the 500 largest American companies are family companies. For this purpose, several indicators have been presented in many countries to define such companies. Researchers have conducted various studies on these companies in recent years due to their importance (Amin and Liu, 2020). Examining financing decisions and achieving optimal leverage is necessary for family companies because certain conditions that affect their financing decisions prevail in family companies. On the other hand, family owners, to maintain the company's reputation and their conservativeness, fearing the risk of bankruptcy and liquidation of the company and the loss of all capital and family heritage, have less desire to increase debt in the capital structure of their company and prefer to finance with internal funds is more than borrowing through debt. On the other hand, combining the capital structure of family companies from the point of view that such companies do not want to lose supervision and control over the performance and decisions of the company through the issuance of new shares and adding new shareholders, this factor may be contradictory to their first request to use less debt in the capital structure and force them to increase the debt in the capital structure. They can ignore this case to the point that it does not endanger their control and authority (Bas et al., 2022). Hence, the non-economic characteristics and the desire to maintain their power and supervisory characteristics may be decisive for the managers of such companies to adjust the leverage and achieve optimal leverage (Poletti-Hughes and Martinez Garcia, 2022). On the other hand, companies should seek to achieve the optimal level of leverage that leads to maximum value for shareholders, so this question will play a role in the mind of whether family ownership affects the company's achievement of the optimal level of leverage and the speed of its adjustment. Is it effective? In the continuation of the research structure, the development of the theoretical foundations, hypotheses, and experimental foundations are presented, followed by the methodology and operational definitions of the research variables. Finally, the findings and conclusions will be discussed.

2. Literature Review and Theoretical Principles

The speed of adjustment of financial leverage indicates the movement of companies toward the optimal capital structure. The two primary sources of financing in companies are debt and equity issuance (Akbari et al., 2019; Arikawa and Hoang, 2022). In a public company, equity is a type of financing that shows the number of shares issued. In the hands of the company's small and significant

shareholders, this can somehow monitor and control the company owners based on the amount of stock ownership (Ghorbani and Salehi, 2020) because the wide dispersion of shares among shareholders will divide their supervisory power among different groups (Bas et al., 2022). Thus, the owners who are against losing control over the affairs and decisions of the companies and the composition of their capital structure will be more affected (Farhangdoust et al., 2020). In such companies, as far as possible, the financing needs of the company's operations will be done through debt, which is far from justice. This is due to personal interests and a way to expropriate ownership from minority shareholders. In the case of separation of ownership, the level of control of the company's big owners will decrease (Morresi and Naccarato, 2016). In family companies, in general, a large part of the shares is owned by one or more real shareholders, the majority of whom are family members, and family members are employed in managerial and operational positions. According to the studies, it has been determined that if the number of managers' shares is more than a specific limit, it can motivate them to provide better financial status and performance. Also, significant shareholders can influence the company's decisions and activities by controlling the managers' behavior (Moradi et al., 2020).

In family companies, due to the specific ownership structure, protecting the family's interests may be preferable to the protection of the interests of the shareholders (Salehi et al., 2020). As a result, since the shareholders have less access to the essential and basic information of the company, there is always a risk that the interests of this group, especially in the long term, be exposed to danger. Family companies have longer-term horizons than non-family companies, creating long-term plans in the business unit. This occurs because the owner and manager of these companies are from the same family, consider the company as their own, and try to create value in their long-term goals (Amore et al., 2022; Seifzadeh et al., 2022). Companies controlled by their founding families' founders or heirs are often called family companies. Most private companies are family-owned, but this ownership structure also exists among large publicly traded companies. Family companies are significant from an economic point of view because they are the main drivers of most economies (Amin and Liu, 2020). Family firms place more value on the firm's survival than on maximizing shareholder wealth. Company survival has become a primary goal for family businesses, as it is a legacy to pass on to the next generation. From the long-term perspective of the business, family firms are more concerned about building a good reputation than non-family firms. Company reputation is an essential strategic asset for family businesses. Maintaining a low level of debt-to-equity ratio and the effect of family companies on financial performance is a unique feature of such companies. Family-controlled firms use less debt to mitigate risk, generally have a long-term perspective, and are less risk-averse than non-family firms. Family companies often prefer internal financing to prevent the increase of foreign capital and have more liquidity than other companies, with an average difference of 2.3% of total assets. Another group of researchers believes that family companies may use more debt than non-family companies because they aim to grow the company without reducing ownership, control, and authority over decisions (Salehi et al., 2022). Sometimes, family companies tolerate the loss of financial performance to achieve non-financial goals, such as maintaining family control over the company, which may increase family companies' financial leverage (Morresi and Naccarato, 2016; Shafeeq Nimr Al-Maliki et al., 2022). This action of family companies is for two main reasons. First, family owners usually invest their wealth in the business, so they have an emotional connection to their investment, which gives family members a longer horizon than other shareholders (for example, institutional investors). Second, family owners act with more compassion and sensitivity at work due to more belonging to the company because managers and owners are often one, which will create more belonging in work and lead the company to higher commitment (Bas et al., 2022).

Two main conflicting views regarding the choice of capital structure in family companies (Salehi et al., 2023). On the one hand, it is expected that family companies tend to increase their financial leverage less than non-family companies. The reason for this is the risk aversion of family members because a large part of their financial and human capital is dependent on the future and performance of this company. For this reason, family companies tend to maintain a low level of debt to reduce the risks of bankruptcy. It may jeopardize the long-term goal of handing over the company to the heirs (Murro and Peruzzi, 2019). Also, in the second point of view, it is stated that in family companies, compared to non-family companies, it is possible that such companies do not have a great desire to issue a lot of shares. They will probably maintain a balance in this field to minimize the risk of reducing the amount of stock ownership among family members and the controlling role of the family. According to behavioral theory, this tendency to maintain control comes from the entrepreneur's preference for independence, especially in the case of smaller companies, and it is more in companies that do not desire to involve foreign shareholders (Amin and Liu, 2020). According to agency theory, family firms retain control to remain private. However, all these studies seem to ignore that most companies that rely on increased control mechanisms are likely to be controlled by a single family and that the greater use of debt occurs in companies with a higher level of separation between voting rights. Cash flow may be related to the family personality of the largest shareholder (Bas et al., 2022). From a dynamic point of view and assuming the existence of a target leverage, the debt ratio of family companies converges to the target leverage at a slower speed due to higher adjustment than non-family counterparts. Still, non-family companies have a higher debt level than family companies. Also, in family companies, the use of debt is a tool to gain more control over the company's affairs, and this increases the target leverage in family companies, so the costs of achieving the optimal leverage will be reduced (Morresi and Naccarato, 2016; Zimon et al., 2022).

Do et al. (2022) conducted a study on product market threats and leverage adjustment and stated that the effect of product market threats on leverage adjustment is more evident for companies with weak governance quality exposed to product market threats. Finally, achieving the target capital structure increases the value of the company. Arikawa and Hoang (2022) stated that the speed of capital structure adjustment was investigated using a partial adjustment model. The results showed that the speed of adjustment in emerging markets is very slow, and Vietnamese companies do not adjust their capital structure with high flexibility toward optimal value. Also, Vietnamese companies mainly use debt as external financing. Amore et al. (2022) assessed the performance of family companies during the COVID-19 era and posited that family companies showed higher market performance and operating profit than other companies during the epidemic period. This result is stronger for firms without related minority investors and with multiple family shareholders. By examining the mechanisms, it was shown that the better performance of family firms is due to the more efficient use of labor and less loss of income. Minh et al. (2022) analyzed the effect of family ownership on the performance of companies and observed that the relationship between family ownership and the performance of Vietnamese companies is negative. Tobin's Q decreases with family ownership. Firm performance is lowest during family ownership, and financial performance declines as family ownership increases. Rostami et al. (2022) assessed the effect of managers' short-sightedness on the speed of adjustment of financial leverage towards optimal leverage and expressed that managerial myopia has had an opposite effect on the speed of adjustment of financial leverage, so in the companies with myopic managers, the speed of adjusting the financial leverage towards the optimal leverage is lower.

Vo et al. (2021) stated that, on average, companies tend to adjust their capital structure more quickly after the outbreak of COVID-19. In addition, countries where COVID-19 is causing more severe damage adjust their target leverage faster than those in less affected countries. An et al. (2021)

indicate a positive relationship between foreign institutional ownership and the speed of adjustment of companies' leverage. Foreign institutional investors have an essential regulatory role in reducing agency conflicts between shareholders and managers. Murro and Perozzi (2019) stated that the adverse effect of family ownership on credit allocation is more relevant, especially for small companies. This is while this factor decreases in companies with closer lending relationships. Finally, evidence suggests that family firms with high ownership concentration are more likely to be rationed by banks. Bacci et al. (2018) stated that the relationship between the level of debt and the dispersion of ownership within the family is moderated by the generation's involvement, which reverses it in the next generations. By focusing on family ownership and capital structure, Ramalho et al. (2018) stated that when the company is large or located in an urban area, family ownership has a positive effect on the financial leverage of companies. For small firms located outside urban areas, no effect was found. On the other hand, the proportion of debt held by leveraged family firms decreased for micro and small firms but increased for large firms. In general, the financial crisis affects small and large family companies in terms of financial leverage. Fitzgerald and Ryan (2019) stated that small companies with high growth and low-paid dividends adjust the target leverage faster than large companies with low growth and high-paid dividends. According to the stated content and because in family companies, due to the presence of owners in management positions and their sense of belonging and responsibility more than the managers of non-family companies, the speed of adjustment of the financial leverage towards the optimal leverage will be more. So, the research hypothesis is presented as follows:

Research hypothesis: In family companies, compared to non-family companies, the financial leverage moves faster towards the optimal leverage.

3. Research Methodology, Model and Variables, Population and Sample

In order to achieve the objectives of the research similar to previous research, the mathematical model of the research was developed and presented as follows:

$$\begin{aligned}\text{Actual Leverage}_{it} &= (\lambda\beta) + \beta_1 \text{BTM Ratio}_{it} + \beta_2 \text{Profitability}_{it} + \beta_3 SIZE_{it} + \beta_4 \text{TANG}_{it} \\ &+ \beta_5 \text{ Selling Expenses}_{it} + \beta_6 \text{AGE}_{it} + \beta_7[(1-\lambda) Actual\ Leverage_{i,t-1}] \\ &+ \beta_8[(1-\lambda) Actual\ Leverage_{i,t-1}] \times \text{Family} + \varepsilon_{it}\end{aligned}$$

Model (1)

Family ownership: To identify family companies as an independent variable, according to researchers such as Amore et al. (2022), family ownership is considered according to the following conditions:

The real shareholder is the owner of at least 20% of the company's ordinary shares, or one of the members of the board of directors alone owns at least 5% of the ordinary shares, or the total shares of the real member of the board of directors and his family members are at least 5% of the total of the company's ordinary shares. Finally, the companies that meet the above conditions will be assigned as family companies with code (1), and the rest will be assigned code (0).

The speed of adjustment of financial leverage (SL):

The partial adjustment model is used to measure the speed of adjustment of financial leverage as a dependent variable (Flannery and Rangan, 2006). In the partial adjustment model, actual and optimal leverage should be measured in the first step. Still, since optimal leverage cannot be measured directly, its value must be obtained by replacing other variables. In this research, those apparent characteristics of the company that influence financing decisions are considered, and other characteristics, such as the economic situation and unobservable (uncontrollable) effects that affect

financing decisions, are not easily measured and considered as the estimator's error. The optimal leverage is estimated using the following model:

Model (2) $$L^*_{it} = \beta' x_{it} + u_{it}$$

Where:

L^*_{it} optimal leverage; $x_{it}$is a vector of characteristics of the ith company at time t, which is related to the benefits and costs of the activity under different leverage ratios, β' is the estimated coefficient of this vector and $u_{it}$is the model error component.

The variables most used in the company's capital structure research are used to select the company's characteristics.

The variables most used in the company's capital structure research are used to select the company's characteristics.

1. ***Growth opportunities (BTM Ratio):*** divided by the market value of equity divided by the book value of the company's total assets.
2. ***Company profitability(profitability):*** the ratio of annual profit before interest and taxes to its total assets at the end of the year.
3. ***Company size (SIZE):*** natural logarithm of assets.
4. ***Fixed Assets (TANG):*** dividing fixed assets by total assets.
5. ***Sales Growth:*** Sales minus the previous period's sales divided by the previous period's sales.
6. ***Life of the company(AGE):*** the natural logarithm of the year of establishment of the company to the year of the research time horizon.

The current research is applied, and from the methodological point of view, correlation is causal type (retrospective). The statistical population under investigation includes all the companies listed on the Tehran Stock Exchange, and the period under investigation is from 2012 to 2021. The listed companies on the Tehran Stock Exchange with the following conditions have been selected as samples. To make the information comparable, the end of the companies' financial year should be the end of March. They have not changed the financial period under review during the (10-year) period. Information about the selected variables in this research should be available. Do not affiliate with banks, insurance companies, and investment companies. Finally, 133 companies have been selected as the study's final sample. Data analysis was done using the data panel approach, Eviews 10 software, and the powerful standard tool to test the hypotheses.

4. Findings

In order to provide an overview of the statistical population and to better understand the research data, Table 1 of the research shows the statistics related to the central indicators and dispersion.

Table 1. The descriptive statistics of quantitative research variables

Variable	Mean	Max.	Min.	S. dev.	Skewness	Kurtosis
Leverage finance	0.540	0.990	0.090	0.200	-0.047	2.420
Growth opportunities	4.360	15.900	1.000	3.870	1.750	5.330
Profitability	0.140	0.590	-0.220	0.150	0.610	3.400
Company Size	14.700	20.800	10.490	1.630	0.710	3.760
Fixed Assets	0.260	0.790	0.0240	0.180	0.860	3.110
Sales growth	0.350	1.880	-0.360	0.440	1.100	4.720
Age	3.600	4.240	2.300	0.370	-0.630	2.630

The main centrality index is the mean, which indicates the distribution's balance point and center of gravity and is a good indicator to show the centrality of the data. For example, the average value for the financial leverage variable is equal to (0.54), which shows that most data are concentrated around this point. In general, dispersion parameters are a measure to determine the degree of

dispersion from each other or their degree of dispersion compared to the average. One of the most important dispersion parameters is the standard deviation. The value of this parameter is Growth opportunities (3.87) and profitability (0.15), which shows that these two variables have the highest and lowest standard deviation, respectively.

Table 2. The frequency distribution of qualitative research variables

Description	Sign	Value	Frequency	Frequency percentage
Family companies	Family	1	220	16.540
Non-family companies	Un Family	0	1110	83.460
Total	-	0	1330	100.000

Table (2) shows that the family ownership variable is a two-valued qualitative variable (0 and 1), with descriptive statistics in the frequency distribution. The total number of surveyed companies is 1330 cases, of which 220 cases, equivalent to 16.54% of the companies, are family companies, and 1110 cases, equivalent to 83.46%, are non-family companies.

Table 3. The results of classical regression hypothesis tests

Test type	Test statistic	D.f	Sig. level	Result
F-Limer	5.120	132	0.000	Acceptance of panel data model (panel data)
Hausman	588.600	8	0.000	Fixed width effects from the origin
White	279.820	0	0.000	Existence of serial autocorrelation in model disruptive sentences
Breusch-Godfrey	34.860	0	0.000	Existence of variance heterogeneity in model disruptive sentences

According to Table (3), the significance level of the Chow (F-Limer) and Hausman tests is below 5%, confirming the pattern of panel data with fixed effects. Also, White's test with a significance level below 5% indicates the existence of serial autocorrelation in model disruption sentences. Finally, Godfrey's test, which had a significance level below 5%, showed that variance heterogeneity also exists in model disruption sentences. Finally, to solve the heterogeneity of the variance, the command (gls) and to solve the serial autocorrelation, the features of the standard instrument have been used in Econometric software. In the first stage, it was observed that the level of the Durbin-Watson is between 1.50 and 2.50, and the autocorrelation in the model has been lifted.

Research hypothesis: In family companies, compared to non-family companies, the financial leverage moves faster towards the optimal leverage.

The results of Table (4) show that the interaction of the leverage of the previous period with family companies with a positive coefficient (0.001) and a significance level below 5% (0.021) has a direct and significant relationship with the financial leverage of the current period. Family companies are able to increase the speed of adjusting the leverage towards the optimal leverage by a factor of (0.99). Somehow, in family companies, the speed of adjusting the financial leverage towards the optimal leverage is faster than in non-family companies. Therefore, the research hypothesis is accepted at the error level of 5%. The coefficient of determination is equal to 91%, which shows that the independent and control variables in the model have been able to cover 91% of the changes in the dependent variable. Also, the Durbin-Watson value is equal to 1.62, which shows no serial autocorrelation between the sentences of the disruption model. The test statistic with a significance level below 5% shows that the research model is a good fit.

Table 4. The result of the research hypothesis test

$$\textbf{Actual Leverage}_{it} = (\lambda\beta) + \beta_1\textbf{BTM Ratio}_{it} + \beta_2\textbf{Profitability}_{it} + \beta_3 SIZE_{it} + \beta_4\textbf{TANG}_{it} + \beta_5\ \textbf{Selling Expenses}_{it} + \beta_6\textbf{AGE}_{it} + [(1-\lambda)\textit{Actual Leverage}_{i,t-1}] + [(1-\lambda)\textit{Actual Leverage}_{i,t-1}] \times \textbf{Family} + \varepsilon_{it}$$

Variable	Coefficient	S. D	t statistic	Sig.	VIF
Growth opportunities	0.005	0.000	5.530	0.000	1.600
Profitability	-0.720	0.031	-22.800	0.000	1.020
Company Size	0.011	0.005	2.100	0.035	1.260
Fixed Assets	-0.370	0.033	-11.150	0.000	1.040
Sales growth	0.005	0.006	0.760	0.440	1.610
Age	-0.230	0.059	-3.880	0.000	1.110
Actual leverage t-1	0.350	0.054	6.560	0.000	1.370
Family Ownership × Actual leverage t-1	0.001	0.0004	2.290	0.021	1.130
Intercept	1.190	0.170	6.680	0.000	-
Coefficient of determination			0.910		
Durbin-Watson			1.620		
F statistic			88.214		
Significance level			0.000		

5. Conclusion and Suggestions

The movement of the companies' capital structure towards the targeted or the same optimal lever is one of the basic and important requirements to reach the highest value and corporate benefit and guarantee the company's future survival. Since in family companies, the goal of the owners and managers is to preserve and survive the company, achieving the optimal leverage faster is of special importance. Family companies have special conditions compared to non-family companies due to the type, structure, and arrangement of shares between owners, the distribution of corporate officials to owners and family members, and their sensitivity to their human and emotional capital, such that these conditions are specific to family companies. There are two general theories in family companies; firstly, these companies are not interested in increasing the company's debt level because this factor may cause the risk of liquidation and bankruptcy for the company in the future. And this can take their personal and family wealth out of their hands. On the other hand, theories state that in family companies, by increasing the level of debt in their capital structure, they try to focus more on the equity sector and not disperse ownership among minority shareholders to maintain their supervisory power. Therefore, in the present study, by examining this case, the speed of adjustment of financial leverage towards optimal leverage is higher in family companies than in non-family companies. In the final hypothesis test results, it was observed that the speed of adjusting the leverage towards the optimal leverage is faster in family companies. This is in line with the second theory, which states that from a dynamic point of view and assuming the existence of a target lever, the debt ratio of family companies converges on the target lever at a slower speed due to higher adjustment compared to non-family counterparts. However, non-family companies have a higher level of debt than family companies; also, in family companies, debt is a tool to control the company's affairs more, increasing the target leverage in family companies and, therefore, the cost. The achievement of the optimal leverage will decrease its. Therefore, financial leverage is a tool in the hands of the family owners to maintain their level of power over the affairs of the company. On the other hand, the company's debt will not increase because achieving the optimal leverage will happen faster due to the higher actual and target leverage. The obtained results are somehow in line with the studies of Poletti-Hughes and Martinez Garcia (2022), Bas et al. (2022), and Morresi and Naccarato (2016) and can complement the studies done in this field. These studies stated that family companies have a higher level of financial leverage and debt than non-family companies, which can reduce adjustment costs.

According to the results, family companies are suitable for investors to invest due to the managers' sensitivity to maintaining the principal capital and the company's reputation. Also, financial institutions have provided financial support to such companies. The cooperation of the stock exchange organization has provided a wider field of activity for such companies in the stock exchange so that investors can benefit from the benefits of these companies in the capital market. Moreover, according to the capabilities of these companies, it can cause growth and competition with other companies in the capital market of Iran. It is suggested that future researchers investigate the impact of the quality of corporate governance on the relationship between family ownership and the speed of financial leverage adjustment.

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RESEARCH ARTICLE

The Impact of Corporate Governance, Ownership Structure, and Cash Flow on the Value of the Companies Listed on the Iraqi Stock Exchange

Diana Neamah Abdulrazzaq, Mehdi Arab Salehi*, Leila Torki

Department of Accounting, Department of Accounting, University of Isfahan, Isfahan, Iran

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Abstract

Stock price garners considerable attention from internal (financial and executive managers) and external (creditors and shareholders) users. Shareholders invest in the company's stock to gain profitable returns. Cash holding level is among the most important determinants of firm value (stock price). Managers might invest the excess cash in non-profitable projects and reduce the firm value. However, studying corporate governance mechanisms and ownership structure can control such managerial behaviors. Therefore, this study investigates the impact of corporate governance, ownership structure, and cash holding on firm value. The sample comprises 35 companies listed on the Iraq Stock Exchange via a systematic sampling method. Multiple regression models and panel data analyzed the data. Findings show that corporate governance and cash holding affect the value of Iraqi companies, but ownership structure does not significantly affect firm value. To the extent of our knowledge, this is the first study investigating the impact of corporate governance, ownership structure, and cash flow on the value of Iraqi companies. Despite earlier studies, this study uses the composite index to evaluate corporate governance.

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*Corresponding Author: Mehdi Arab Salehi
Email: mehdi_arabsalehi@ase.ui.ac.ir
Tel: 09133289157
ORCID: 0000-0003-3982-9185

1. Introduction

The Iraq Stock Exchange (ISE) was established 17 years ago and has listed over 100 large companies ever since. ISE peaked performance with investors' surge in the first three months of 2018 following the defeat of a terrorist (ISIS) attack. Economic growth increased the number of new companies listed to 10%. This growth is noteworthy because it is contemporaneous with the extreme fluctuations in global markets. However, ISE tackles other challenges, including political instability, represented by a 7% decline in value due to the May elections, disputes, oil prices, and other economic dissatisfactions (England, 2018). Since ISE is dramatically affected by economic and political changes, it is a reliable indicator of economic conditions (Ali et al., 2019). Iraq can be a good place for domestic and foreign investments. Firm value is among the dynamics of the capital market represented in the growth of stock prices. A literature review reveals that various factors affect firm value. This study addressed the impact of corporate governance, ownership structure, and cash on firm value.

Theoretically, a company's liquidity can affect its decisions. Sujoko (2007) found that companies can decrease their potential risk and increase their value by keeping a proper level of liquidity. Cash reserves have increased significantly. Some companies keep excess cash because of information asymmetry or a better investment opportunity in the future. Information asymmetry in companies with excess cash flow reduces investors' attention and stock liquidity. When liquidity is low, companies use external financing to pay short-term debts, which will impose other costs. If the excess cash flow exists in the company, investors will consider more value for each extra rial. However, when the liabilities are due, the excess cash flow will not create more value for the company, and investors aware of this will consider less value for each excess rials (Sun et al., 2012).

Dewi and Abundanti (2019) found that the structure of corporate governance changes the impact of excess cash on firm value. Therefore, firm value has a positive relationship with free cash flow. Hence, investors consider more value for the excess cash flow in companies with better corporate governance. However, investors do not consider more value for such cash in companies with higher information asymmetry (Paminto, 2015).

According to the agency costs of free cash flow, the firm value changes with the dividend per share policy, and the dividend policy is considered a tool for reducing agency costs (Mahenthiran et al., 2020). Scholars believe that companies use dividend shares to signal information regarding growth and stability procedures to external users (Simorangkir, 2019). Managers expect paying dividends will increase shareholders' satisfaction and loyalty (Leary and Michaely, 2011). Paying dividends initiates a positive market response and increases firm value in inefficient markets (Seth and Mahenthiran, 2022).

Although numerous studies (Liu et al., 2015; Bozec, 2005; Gillan, 2006; and Guluma, 2021) have addressed corporate governance in developed and developing countries, Iraqi studies are few and primarily focus on the financial performance of Iraqi companies or disclosure and transparency aspects. Since Iraq has the potential for numerous economic opportunities, it is necessary to build an environment that explains the best procedures and provides sufficient assurance for investment activities in Iraqi companies (Muhammad, 2016). Madhani (2017) found that some of the conditions in their study aligned with international principles of corporate governance in reflecting the economic aspects of Iraq's market and reducing the risk of listed companies on ISE in facilitating their entrance to global markets and creating transparency for shareholders (Kartika and Utami, 2019). Therefore, when shareholders' rights are preserved, the firm value and investor efficiency are expected to be increased.

Corporate governance, as a system of control and management within a company, plays a crucial role in valuing companies. A strong and sound ownership structure can foster trust among

shareholders and other market participants, ultimately increasing the company's value. Additionally, a strong and sustainable cash flow can significantly contribute to determining the value of a company in the Iraq Stock Exchange. Companies that can generate appropriate and sustainable cash flows often become valuable enough to attract investors, potentially leading to innovations in cash flow management and financial policies. Since most investors in Iraq's stock exchange try to increase their stock values, investigating the role of corporate governance, ownership structure, and the level of cash holdings on firm value is vital. Information concerning the current and used cash flow is necessary for investors because it enables them to better understand ongoing concerns, financial flexibility, liquidity, and firm value. The excess cash flow poses agency problems because managers might invest a lot of cash in unprofitable projects, which is unfavorable for investors and consequently reduces the firm's value. Therefore, addressing this issue in Iraq's capital market can help enrich the relevant literature.

2. Theoretical Foundation and Literature Review

2.1 Firm value

Firm value can be defined as the set of beliefs that help companies select from instruments and alternative objectives. More technically, it is the weight decision-makers place on alternative objectives. Alternative objectives are accounting profitability, stock returns, customer value, market share, company growth, employee satisfaction, or the firm's social performance criteria, such as firm image, environmental impact, and income tax. These variables' current or future values can balance short-term and long-term objectives. The core concept of firm value lies in shareholders' understanding and view of the company's success, which is typically represented in the company's stock price (Reschiwati et al., 2020). Based on the theory of shareholder value, a company's primary objective is to maximize its shareholders' wealth, and the company's value is determined by its ability to generate cash flow and distribute it to the shareholders (Jenson and Meckling, 1976). The value of a company is influenced by multiple factors, some of which are discussed below:

- The level of liquidity can have a direct impact on the value of a company. Companies with strong and stable cash flows usually have a higher value (Damodaran, 2012).
- The growth of revenue and profits indicates the company's ability to create value for shareholders. Companies with significant growth in revenue and profits generally have a higher value (Brealey et al., 2014).
- Companies with high financial flexibility are better able to respond to environmental changes and economic policy uncertainties. This financial flexibility can contribute to an increase in the company's value (Myers, 1977).
- Strong and long-term relationships with customers can lead to an increase in the value of the company. Companies that serve their customers well and establish positive relationships with them are likely to have a higher value (Reichheld and Sasser, 1990).
- Companies are often influenced by environmental factors such as laws and regulations, market conditions, competition, and technological changes. These factors can significantly impact the company's value (Hill et al., 2017).

2.2 Corporate governance

The Organization for Economic Co-operation and Development (OECD) defines corporate governance as relationships between managers, board members, shareholders, and other stakeholders. Corporate governance imposes a structure where company objectives, the path to achieve them, the monitoring mechanisms, and governing performance are determined (Chin et al., 2019). The

emergence of joint stock companies from the 18th century is among the most significant economic changes and probably the most critical factor in industrial development. It has several outcomes, including separation of ownership from management, differences in optimal function, conflict of interest, and agency theory. The conflict of rights and the danger of violating minority shareholders' rights by large shareholders with higher controls have been among the agent's problems in most countries.

2.3 Ownership structure

The ownership structure is the focal point in corporate governance. Determining the type and combination of ownership structure is an important tool in companies' governing and controlling activities. This governance dimension is identifiable in various ownership determinants, including ownership distribution, ownership concentration, and the combination and percentage of individual, minor, and large shareholders. Companies' ownership structure has various patterns of institutional shareholders, managerial ownership, and private and governmental shareholders (Karim et al., 2023). Shleifer and Vishny (1997) found that large shareholders tend to monitor management more closely, which reduces agency costs and increases firm value and performance. According to Fama and Jenson (1983), the alignment between ownership and control eventually reduces conflict of interest and increases firm value. Despite individual shareholders who lack incentives in monitoring management, large and institutional shareholders have higher monitoring incentives that can boost their stock values.

2.4 Cash

The International Accounting Standards Committee (IASC) defines cash and cash equivalents as follows:

Cash: available cash funds and demand deposits (short-term bank deposits)

Cash equivalents are items that are easily converted to cash with the lowest risk of conversion price.

The agency problem is one of the most essential determinants of a corporation's cash holdings. Studies show that cash holdings are higher in corporations where the protection of shareholders' rights is weak. Furthermore, when shareholders' protection is weak, factors (such as investment opportunities and information asymmetry) that lead to higher cash holdings will be insignificant (Dittmar et al., 2003).

Jenson and Meckling (1976) identify two conflicts of interest in a business unit:

a) The conflict of interest between managers and shareholders
b) The conflict of interest between shareholders and debt security holders

Such conflicts eventuate in identifying agency costs that could be used to justify managers' cash-holding behavior.

2.5 Development of hypotheses

2.5.1 Relationship between corporate governance and firm value

Corporate governance encompasses the structures, mechanisms, and relationships that regulate and control managers, shareholders, and other relevant entities in a company's decision-making and management processes. Corporate governance significantly impacts company value as a control and oversight system over decision-making and company performance. Strong and effective corporate governance reduces the need for trust and instils confidence in shareholders to invest in the company. This trust and confidence attract new capital, increase stock value, and generate market demand, leading to improved company performance and operational efficiency (Tiep Le and Nguyen, 2022).

The conflict of interest between managers and shareholders was the central issue in corporate governance until the 1980s. The consensus was that ownership concentration caused agency problems to reduce, which would enhance firm performance. Shahzad et al. (2023) found that corporate governance affects firm value and that earnings quality changes the Relationship between corporate governance and firm value. Assidi (2023) found a direct relationship between corporate governance and discretionary disclosure. Ben Fatma and Chouaibi (2023) concluded that firm value is positively associated with board gender diversification and CEO ownership, but it has a negative relationship with board size and ownership concentration. Chin et al. (2019) found a positive relationship between board size and independence with firm value. El-deeb et al. (2022) found that corporate governance significantly impacts disclosure tone and company value. Tiep Le and Nguyen (2022) demonstrated that corporate governance significantly increases company value. Baihaqqi et al. (2023) found that leverage and firm size impact company value, while profitability and good corporate governance do not considerably affect company value. Wahidahwati and Ardini (2023) found that corporate social responsibility (CSR) directly impacts firm value and that better corporate governance leads to increased firm value. They also demonstrated that CSR cannot mediate the effect of good corporate governance on firm value.

Higher monitoring by corporate governance eventuates increased transparency of financial statements to ensure that financial information is reliable and managers do not act in self-interest, thereby preventing stock price bubbles and future stock price crashes in the capital market (Black et al., 2006). Additionally, corporate governance helps mitigate risks associated with improper decision-making, corruption, and mismanagement. By reducing these risks, the costs associated with uncertainty decrease, and the company's value increases. Corporate governance that enhances decision-making processes, independent auditing, information transparency, and shareholder rights considerably impacts company value and can provide solutions to increase company value.

Based on the foregone literature review, the first hypothesis is conducted as follows.

H1: There is a significant relationship between corporate governance and the value of companies listed on the Iraqi stock exchange.

2.5.2 Relationship between ownership structure and firm value

The corporate ownership structure encompasses the distribution of shares, the type and size of shareholders, the company's methods of control and management, and other related factors. In a balanced and appropriate ownership structure, the distribution of shares takes place fairly and evenly, with no group of shareholders having superiority over others. This leads to increased shareholder confidence and reduced risk associated with excessive concentration of power and control in a specific group. The type and size of shareholders can also play a significant role in firm value. Professional and experienced shareholders with strong management and leadership abilities can facilitate performance improvement and enhance company value (Wu et al., 2022). The presence of large and influential shareholders can have a positive impact on market confidence and attract investors.

There was a common conjecture that all the groups in a joint stock company work for the same goal. Still, Jenson and Meckling's (1976) theory argued that various groups, owners, and managers work for diverse objectives that meet self-interests. In agency relationships, owners maximize their wealth. Therefore, they monitor agents' activities and evaluate their performance. This statement poses the question of whether different ownership structures affect firm performance. Or how would owners' performance affect the firm value if owners were various groups (i.e., government, large shareholders, financial institutions, banks, and other companies), and which group has the highest impact?

Conflict of interest between shareholders raises the impact of ownership structure on firm value. Cuervo (2002) believes that since large shareholders have a substantial percentage of shares, they can adopt their policies and gain private rights. Ownership will be concentrated on some large shareholders when shareholders' rights are not equally preserved.

Kumar (2004) found that managers had the highest impact on firm performance in Indian companies, but external shareholders and holdings significantly have no effect on firm value. Ali et al. (2022) demonstrated that managerial, institutional, and family ownership have a significant and negative relationship with the performance of listed companies in the Pakistan Stock Exchange. Wu et al. (2022) found that environmental, social, and governance performance plays a role in improving firm value. Executive and institutional ownership has a significant and positive impact on firm value. Additionally, these two variables moderate the relationship between environmental, social, governance performance, and firm value.

Karim et al. (2023) found a weak relationship between ownership structure and firm value. Suriawinata and Nurmalita (2022) found that firm size moderates the relationship between ownership structure and firm value, and with increasing firm size, managerial behavior tends to align more with shareholder interests. However, on the other hand, with increasing firm size, institutional investors are inclined to align with managers to enhance firm value at the expense of other shareholders. Rusnaeni et al. (2022) found a positive and significant relationship between financial performance and capital structure with firm value. Their results showed that the moderating role of dividends on the relationship between financial performance and capital structure is not confirmed. Jentsch (2019) found that when institutional shareholders are part of the ownership structure, firm value is increased. Strong and effective corporate governance is crucial for safeguarding the interests of shareholders and other stakeholders, strengthening oversight and control over management, and providing transparency and timely and accurate information. Enhancing the quality of corporate governance can result in performance improvement and an increase in firm value. The second hypothesis is conducted as follows.

H2: There is a significant relationship between ownership structure and firm value.

2.5.3 Relationship between cash flow and firm value

The relationship between cash flow and firm value has received significant attention in the financial domain and holds great importance for investors and strategic decision-makers. Cash flow refers to the amount and timing of cash and investments generated within a company, encompassing revenues, expenses, capital investments, operational activities, and other cash flows related to the company's operations. Cash flow directly affects the return on investments and demonstrates the company's ability to generate profits and liquidity. On the other hand, cash flow can also impact value-related factors such as discount rates, risk, and stability. The relationship between cash flow and firm value is crucial, providing insights into a company's financial performance and sustainability. Understanding and effectively managing cash flow are essential for maximizing the value and success of a business (Jihadi et al., 2021).

When a company has low liquidity, it has to use external financing to pay its short-term debts. Investors consider more value for each extra rial if the company has excess cash flow. Still, when liabilities are due, the excess cash flow will not create more value for the company, and investors will consider lower values for each rial of the excess cash flow (Sari and Ardiansari, 2019).

A company's liquidity shows its ability to cover short-term liabilities. The higher the liquidity, the stronger the company's ability to meet its liabilities. Companies with high liquidities have better futures because investors recognize them as companies with good performance that can increase stock and firm value (Putri and Wiksuana, 2021). The firm value represents an image of the firm's

performance that can affect the qualitative evaluation of the company. Several factors, including debt policy, the company's capability in handling financial affairs and financing all liabilities, firm size, stock prices, and earnings, affect the firm value. Companies aim to enhance the welfare of owners by maximizing stock prices. Increasing firm value is a proper objective in guiding financial management decisions. Maximizing firm value is maximizing the earnings or income by considering the money's risk factors and time value (Sari and Sedana, 2020). According to Jenson and Meckling (1976), firm value is the function of how the shares are allocated between internal (managers) and external parties (stakeholders).

The hierarchical financing theory states that companies finance their resources in the following order. First, they use the retained earnings, then debt, and finally, issuing stock. They follow this order to reduce their financing costs. Since managers prefer internal financing to external financing, they tend to hold cash flow to finance their debts from internal resources instead of external resources. This theory predicts a positive relationship between cash holdings and firm value. However, according to free cash flow theory, managers tend to hold cash to increase control over their resources and equip themselves with judgmental power in making investment decisions. Paying shareholders reduces managers' power and increases the chance of being controlled and monitored if they need capital. Therefore, internal financing obviates such monitoring and control (Ameer, 2012). This theory posits a negative relationship between cash holding and firm value.

According to hierarchical theory, the debt ratio is positively associated with firm value. Higher usages of financial leverage pose financial distress, reduce the firm value, and result in bankruptcy. When businesses use higher debt levels, creditors and shareholders need them for efficient risk management. They found that firm value is higher when there is debt ownership. The capital structure represented by debt increases firm value via tax saving from profit, which is reduced after the tax costs. Income tax increases firm value because the interest rate is a cost that reduces tax payments (Djashan, 2019; Dang and Do, 2021; Komarudin and Affandi, 2019). Jihadi et al. (2021) found a positive and significant relationship between stock liquidity, financial leverage, and profitability with firm value. Their results showed that social responsibility moderates the relationship between stock liquidity, financial leverage, and profitability with firm value. Yousefi and Yung (2022) found that financial flexibility increases firm value in the face of economic policy uncertainty. Sulehri et al. (2022) found that cash flow is significantly influenced by the outcomes expected from intangible assets. İbrahim (2023) found that cash flow significantly impacts business performance. Companies with strong and stable cash flows typically have a higher value. A strong cash flow enables the company to make appropriate investments, settle debts, achieve better profitability, and provide significant returns to shareholders. In general, companies with strong and stable cash flows are more attractive to investors and can reduce investment risk. Therefore, paying attention to cash flow and effectively managing it is crucial for creating and increasing firm value. Based on the theoretical foundations and previous discussions, the third hypothesis is stated as follows:

H3: There is a significant relationship between cash flow and firm value

3. Research Methodology

This study is applied research based on descriptive and correlational analysis. Data collection is qualitative and deductive-inductive reasoning. It is ex-post-facto research that collected information based on archival data collection. The statistical population includes all the companies listed on the Iraq stock exchange from 2010 to 2021. Companies with the following conditions comprise the sample of this study.

1. The companies with the fiscal year ending in late December.

2. Companies which have not changed their activity or fiscal year.
3. Companies with available data.

35 Listed companies were selected. Table (1) shows the conditions for selecting the sample.

Table 1. The statistical sample

Description	Number
All the listed companies on the Iraqi Stock Exchange	112
Eliminate companies with fiscal years ending in months other than December.	62
Eliminate Companies with changed fiscal years.	10
Eliminate companies with partial information access during the studied period.	5
Sample	3

The following regression models are used in hypothesis testing.
Model (1)

$$price_{i,t} = \alpha_0 + \beta_1 Gov_{i.t} + \beta_2 ownst_{i.t} + \beta_3 cash_{i.t} + \beta_4 size_{i.t} + \beta_5 lev_{i.t} + \beta_6 mb_{i.t} + \varepsilon_{i,t}$$

Where:
Price it: stock price of the company i in year t
GOV it: corporate governance of company i in year t
OWNstr it: ownership structure of company i in year t
Cash it: cash holdings level of the company i in year t
Size it: the size of the company i in year t
LEV it: financial leverage of company i in year t
MB it: market to book ratio of shareholders' equities of the company i in year t
Error term it: error term for the company i in year t

3.1 The Measurement variables

3.1.1 The Dependent variables

Firm value: firm value is the stock price of the company i in year t, which, based on Ali et al.'s (2019) study, shows the natural log of firm value (number of shares at the end of the year*stock price).

3.1.2 The Independent variables

The study's dependent variables are corporate governance mechanisms, ownership structure, and level of cash holdings.

A) Corporate governance: this study uses Ali et al.'s (2019) research and makes some modifications to apply the following index to evaluate corporate governance in Iraq.

1. Separation of CEO from board members: if the CEO is not among the board members, it equals one; otherwise zero.
2. The ratio of internal board members: this value equals one for companies with a higher percentage of board members to total members and zero for other cases.
3. The ratio of irresponsible board members: this value is one for companies with higher irresponsible board members and zero for other cases.
4. The ratio of governmental members: this value equals one for companies with higher government members and zero for the rest of the members.
5. The female board members ratio is one for companies with higher female members and zero

for the others.

6. The ratio of non-Iraqi board members is one for companies with greater percentages of non-Iraqi members and zero for the others.

7. Audit type: if the auditor is one of the top four Iraqi audit firms, it equals one and otherwise zero (Ali et al., 2019). The top audit firms in Iraq have been identified from the Iraq Stock Exchange website.

After measuring the above seven criteria for each company each year, the general index of corporate governance for every firm each year is calculated by dividing the points of each company by the maximum points (7), which range from zero to one.

B) Ownership structure: this study uses the following criterion to evaluate the ownership structure.

Ownership structure: this variable shows the ratio of total shares belonging to the largest shareholder to total issued shares (Dang and Do, 2021).

C) Cash holding level: this variable shows the cash flow ratio to the book value of all assets at the end of the year.

3.1.3 The Control variables

SIZE: the Natural Log of the firm's total assets.

ROE: Return on equity, the variable that equals the net income by the book value of shareholders' equity in the current year.

Financial leverage ratio: this variable shows the ratio of debts to assets.

Market-to-book (M/B) ratio: market value of the share by the book value per share

4. Data Analysis

4.1 Descriptive statistics

Table (2) shows the descriptive statistics, including central tendency and dispersion measures for research variables.

Table 2. The Descriptive statistics of research variables

Variable	Abbreviation	Mean	Standard deviation	Minimum	Maximum
Stock price	Price	8.651	1.060	6.565	11.759
Corporate governance	Gov	0.379	0.301	0.000	1.000
Ownership structure	Owns	0.733	0.235	0.000	0.985
Firm size	Size	0.899	0.718	0.532	20.307
Cash holding level	Cash	0.066	0.125	0.000	1.219
Financial leverage	LEV	0.560	0.235	0.025	1.824
Market-to-book-value	MTB	2.674	6.224	-31.912	121.509

Table (2) shows that the average corporate governance for the companies listed on Iraq's stock exchange is 0.379. The average cash holding level is 0.066. Furthermore, the average financial leverage equals 0.560, which indicates that the sample companies have an average debt of 56%.

According to the variance inflation factor, the collinearity between explaining variables is favorable, and regression results are sufficient. The significance level of the Chow statistic for all research models is lower than the expected significance level. According to the Breusch–Pagan test, the fixed effects model is used. Hausman test must be performed to decide between random and fixed effect models. Since the significance level for the Hausman test is lower than 0.050, the fixed effect model is used to test research hypotheses. Wooldridge's test indicates that collinearity exists between all the residuals. The modified Wald test is used for heteroscedasticity variance, and the results show

that the model has heteroscedasticity. Therefore, proper models are used to test the research hypotheses to solve that problem.

4.2 Hypotheses test results

Table (3) shows the hypotheses test results.

Table 3. The hypotheses test results

Dependent variable: firm value					
$price_{i,t} = \alpha_0 + b_1 Gov_{i.t} + b_2 ownst_{i.t} + b_3 cash_{i.t} + b_4 size_{i.t} + b_5 lev_{i.t} + b_6 mb_{i.t} + \varepsilon_{i,t}$					
Evaluation method: Prais-Winston regression (to solve auto-collinearity and heteroscedasticity problems)					
Variable	**Abbreviation**	**Coefficient**	**Standard deviation**	**Z statistic**	**Significance level**
Corporate governance	GOV	0.113	0.032	3.460	0.001
Ownership structure	OWNstr	0.058	0.034	1.680	0.092
Cash holding level	Cash	-0.751	0.277	-2.710	0.007
Firm size	size	-0.452	0.169	-2.670	0.008
Financial leverage	lev	-0.006	0.006	-0.940	0.346
Book-to-market- value	BMV	-0.522	0.334	-1.560	0.118
Intercept	β0	0.226	0.368	0.610	0.539
The adjusted coefficient of determination		0.541		Wald statistic: 13.330	
			Significance level	0.017	

According to Table (2), the significance level for corporate governance is 0.001, which is lower than the significance level of 0.050 and shows that corporate governance significantly impacts firm value and banks. By rejecting the null hypothesis, the H1 is confirmed, which indicates that corporate governance affects firm value and banks. Table (2) shows that the significance level for ownership structure is 0.092, greater than the significance level of 0.050. This result indicates that ownership structure does not significantly impact firm value and banks. The significance level for cash holdings equals 0.007 and is lower than the significance level of 0.050, indicating that cash holding significantly impacts firm value and banks. Therefore, rejecting the null hypothesis, H3 is confirmed.

The coefficient of determination is 0.541, which indicates that dependent and control variables can determine and predict 54.1% of the dependent variables. Furthermore, Wald tests significance level equals 0.000 and shows the regression model has good fitness.

5. Discussion and Results

The concept of value has a long history, starting with businesses and value accumulation. Valuation of companies is among managers' vital plans. It represents how strategy and financial structure affect firm value. Firm value is essential for shareholders, investors, managers, creditors, and other stakeholders in evaluating the firm's future and its impact on risk assessment, investment returns, and stock prices. Investors use accounting information concerning firm value to make sound decisions. Valuation is among the vital investment factors because investors turn their most liquid assets into security. Managing financial resources and cash inflows is one of the most essential factors affecting firm value. Cash flows are vital resources in every business unit. Balancing the current cash flows and cash requirements are among the determining factors of the business unit's health and going concern. Cash flows are significant in various financial decisions, patterns of securities valuation, and evaluation of investment decisions.

In imperfect markets, the internal and external resources cannot be easily interchanged because

external financing needs extra costs that are increased due to information asymmetry. Accordingly, Ozkan and Ozkan (2004) believe managers try to reduce financing costs via cash holdings and hold sufficient cash to remain independent of external financing. On the other hand, since holding excess and idle cash has lower returns and negative economic consequences, this study addressed the impact of corporate governance, ownership structure, and cash flow on the value of the companies listed on the Iraq stock exchange.

Corporate governance refers to a set of structures, principles, and processes used to manage and control companies and safeguard the rights and interests of shareholders, managers, and other stakeholders. These principles and processes ensure that company managers act in the company's and its shareholders' long-term interests. Various factors, including the board structure, information transparency, effective monitoring, conflicts of interest, and board independence, among others, influence corporate governance. Improving each of these factors can contribute to enhancing corporate governance. The research findings demonstrate that improving the quality and efficiency of corporate governance leads to increased company value. This is because stronger and more optimal corporate governance enables company managers to make better decisions and better serve the interests of shareholders and other stakeholders. This can increase investor confidence and demand for company shares, increasing company value.

When there is an agency relationship, a conflict of interest happens between managers, shareholders, and other stakeholders, which raises the possibility of managers performing in a self-interest that is not necessarily aligned with shareholders' and stakeholders' interests (Lastiati et al., 2020). Solving the agency problem provides slight assurance that managers try to maximize shareholders' wealth. This solution requires procedures such as designing and performing the proper corporate governance in companies and economic units. Results confirm the findings of Assidi (2023) in indicating that there is a direct relationship between corporate governance and discretionary disclosure.

The research findings indicate that ownership structure does not significantly impact Iraqi companies' value. This means that factors related to ownership structure, such as share distribution, types and sizes of shareholders, and control and management of the company, ultimately have limited influence on firm value. Theoretically, a company's ownership structure can directly impact its performance and value. Generally, companies have three common types of ownership structures: family, state, and financial/international. Each ownership structure can have its specific impact on performance and company value, but the results of this study are not aligned with these factors. Results showed that ownership structure does not affect the value of the companies listed on the Iraq stock exchange. Ownership percentages can align managers' and shareholders' interests. Since individual shareholders have small ownership, they lack incentives to monitor management. Still, large and institutional shareholders' greater ownership motivates them to monitor management closely, increasing their shares' value. The research results contradict Jentsch's (2019) study, which found that institutional shareholders increase the company's value. This contradiction could be attributed to various factors, such as adaptable regulations and laws in Iraq, issues with the banking and financial system, and the economic and political conditions of the country. Furthermore, the research results are inconsistent with the Rusnaeni et al. (2022) study, which found that financial performance and capital structure significantly and positively affect firm value.

The research results also indicate that cash flow has a negative impact on the value of Iraqi companies, meaning that an increase in cash flow may lead to a decrease in their market value. Cash flow refers to the amount of money and liquidity flowing into and out of a company and can be derived from various sources such as product sales, investments, and loans. According to theoretical concepts of agency theory, when there are higher flows of free cash, managers have incentives to

behave opportunistically because, during this time, managers become reluctant to internal controls concerning the company's financial resources and invest that cash in self-increasing investments. Since sound and profitable investment opportunities are scarce, managers are likely to invest in risky and less profitable investments that diminish the firm value. The research findings are consistent with the results of Yusuf and Sareef (2021), who found that cash holdings have a negative impact on firm value.

5.1. Practical implications

Some research proposals based on hypotheses test results are as follows.

Based on the positive impact of corporate governance on the value of Iraqi companies, the regulators of Iraqi capital markets are suggested to design comprehensive procedures to increase firm value and shareholders' wealth and enhance the corporate governance mechanisms to exercise more monitoring on management.

Companies can change their financial policies in a way that enhances firm value. This includes improving investment structure, optimizing capital management, reducing costs, and increasing profitability.

Based on the research findings, the board of directors' independence and effective management performance monitoring can improve corporate governance and increase firm value.

To increase the value of Iraqi companies, it is necessary to analyze various challenges that may hinder the impact of ownership structure on firm value and take appropriate practical measures to improve the economic and political conditions of the country.

Based on the negative effects of excess cash on the continuation of liquidity and firm value, Iraqi investors are advised to consider free cash flow as the determinant of firm value when making decisions.

Based on the research findings, conducting a more in-depth analysis of ownership structure and factors related to firm value in the Iraqi stock market is suggested. Certain aspects of ownership structure not considered in this study may have significant effects. A more detailed examination of share distribution, types of shareholders, and the relationship between the company and shareholders can provide further insights into the subject.

Based on the negative impact of excess cash flow on firm value, the monitoring institutions are suggested to exercise higher monitoring over management to reduce opportunistic managerial behaviors and the level of excess cash flow.

Auditors should pay close attention to corporate governance as the determinant in increasing opportunistic managerial behaviors.

To reduce dependency on a single cash source and mitigate the negative impact of cash flow on firm value, it is recommended that companies create diversification in their funding sources. For example, utilizing bank credit, attracting investors, issuing bonds, and utilizing other cash financing sources can help companies withstand fluctuations in cash flow.

Future studies can investigate the impact of excess cash on firm value and compare their results with this study. Future studies can address the effect of corporate governance on agency costs and company risk in various industries.

5.2 Limitations of the study

Some cultural factors and local laws may impact the relationships between corporate governance, ownership structure, and cash flow. These factors can impose limitations on interpreting and generalizing the research findings to other environments and markets.

The influence of corporate governance, ownership structure, and cash flow on firm value is complex and may be subject to the influence of other factors. In this study, these factors were considered to the extent possible, but other factors may include economic conditions, laws and regulations, government policies, and market factors. Therefore, in order to determine the causal relationship between variables, these factors need to be considered and controlled for.

Appendix A

The appendix is an optional section that can contain details and data supplemental to the main text—for example, explanations of experimental details that would disrupt the flow of the main text but nonetheless remain crucial to understanding and reproducing the research shown; figures of replicates for experiments of which representative data is shown in the main text can be added here if brief, or as Supplementary data. Mathematical proofs of results that are not central to the paper can be added as an appendix.

Appendix B

All appendix sections must be cited in the main text. The appendices, Figures, Tables, etc., should be labeled starting with "A"—e.g., Figure A1, Figure A2, etc.

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RESEARCH ARTICLE

Fraud Disclosure Tendency in Banking System: Impact of Psychological Contract Breach and Organizational Factors

Ali Sheikhi, Amin Nazemi*

Department of Accounting, Shiraz University, Shiraz, Iran

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Abstract

This study addresses the impact of psychological contract breaches and organizational factors on fraud disclosure in the banking system. The statistical population includes all the employees and internal auditors in the banks listed on the stock exchange in 2022. The data is collected using a questionnaire. Structural equation modeling and Smart PLS v.3 Software propose and test eight hypotheses. Results showed a significant negative relationship between interpersonal effect, employee transactional relationship, financial system instability, deficient organizational changes, and unethical organizational morality with fraud disclosure. However, results showed no significant relationship between past disclosure responses and fraud disclosure tendency. The mentioned organizational factors affect fraud disclosure via the mediating role of psychological contracts. The last hypothesis showed that employees tend to disclose fraud to their supervisors rather than to the fraudster and internal auditors. This article is an innovative study because it is the first research addressing psychological contracts' effects in the accounting and auditing field. Our results and findings by investigating the negative impact of psychological contract breach on the tendency to disclose fraud contribute to audit literature, fraud diamond, and fraud disclosure. Psychological contract breach might affect the “opportunity” element in the fraud diamond by not whistleblowing fraud. Management relies on their employees as an internal control against fraud.

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*Corresponding Author: Amin Nazemi
Email: aminnazemi@gmail.com
Tel: 09125100262
ORCID:

1. Introduction

Studies show that fraud has had an unprecedented increase, yet fraud disclosure has also increased, according to Compliance Hotline Benchmarking and corporate governance reports (John et al., 2023). Iranian banks and institutions have become the target of embezzlement in recent years (Ayani, 2021). In attempting to provide a model for detecting fraud risk factors, Raeisi Nafchi and Dastgir (2019) found that fraud risk factors relevant to financial stability, internal controls, and mandatory standards increase fraud. Therefore, enhancing and improving these factors facilitates fraud detection. High financial transactions and contracts make banks and financial institutions – cash-oriented industries- prone to embezzlement and fraud. However, fraud disclosure by limiting the time for fraud reduces the following costs: Ozili (2016) found that fraud whistleblowers (i.e., those who disclose and reveal fraud) might practice a trace of conservatism in their disclosures based on the cost-benefit analysis. The extent and manner of disclosure are affected by the organization's policy, the country's political economy, corporate ownership, and other institutional factors.

Organizations rely on their staff to detect and disclose fraud. Fraud detected by employees saves time and cost, but if it is found accidentally or by external auditors, fraudsters have enough time, and the costs will be worse (Association of Certified Fraud Examiners, (ACFE, 2014). Nevertheless, findings concerned with the drivers of employees' disclosure or non-disclosure practices remain scant. In investigating fraud non-disclosure, MacGregor and Stuebs (2014) concluded that whistleblowers' rationalization to remain silent about fraud is linked to social factors and their personality traits, including awareness and ethical qualifications. Brink et al. (2015) found that when there is strong evidence of fraud and more peers are aware of it, the probability of fraud disclosure is higher than when fewer coworkers are aware. However, these results do not apply to all situations.

Numerous increasing or decreasing factors, including psychological contracts, affect employee incentives. The psychological contract is an unwritten and implied contract between an individual and an organization. Such contracts are the reciprocal obligations, perceptions, and beliefs that determine the given and received expectations between employee and employer (Liang, 2023). The psychological contract is breached if employers do not fulfill their obligations. Unfulfilled obligations initiate anger, irritation, betrayal, disappointment, depression, anxiety, and hatred. Such emotions affect job satisfaction, organizational commitment, security, motivation, and internal and external performance. Consequently, the employees' undermined motivation for work eventuates in increased work absence and strengthened feelings to abandon the job (Karani et al., 2022).

Psychological contracts are breached due to various individual and organizational reasons. The resulting fraud causes damage and harm to the organization (Rousseau, 2001). According to social exchange theory, the reason for the link between psychological contracts, job satisfaction, and organizational commitment to misconduct is the retaliation principle (Kaplan et al., 2011). Therefore, answering what triggers employees to blow the whistle or remain silent in disclosing and revealing fraud is worth answering.

Psychological contract breach gives rise to opportunistic misbehaviors, including fraud. This situation is exacerbated by employees' silence and reluctance concerning fraud and might affect the "opportunity" element in the fraud diamond. Employees play an integral role in organizations against fraud by detecting and disclosing fraud. Therefore, this study concentrates on reasons for fraud non-disclosure despite the growing number of fraud cases. Moreover, this paper attempts to find what initiates employees' tendency to blow the whistle or remain silent against fraud. To the best of our knowledge, this is the first study in accounting and auditing to address the role of psychological contracts in finding individuals' tendency to disclose fraud and model their disclosure. Our results develop the fraud literature and studies of psychological contract breaches by bringing them into the accounting sphere. These findings also contribute to the literature on accounting, fraud diamond, and

fraud disclosure by showing the negative impact of psychological contract breach on the tendency to disclose fraud. The study is structured by providing the theoretical and experimental foundation, explaining the methodology, and finally illustrating the results and findings.

2. Theoretical and Experimental Foundation

Fraud in the banking system is inevitable, and its indirect costs and damages far outweigh its direct harms. Factors that give rise to fraud include organizational and transactional complexity, changed business operations, increased transactions, and weak internal controls. The organizational and transactional complexity broadens the misconducted opportunity and fraud (Chan, 1999). John et al. (2023) found that the relationship between fraud and market index is negative, but the relationship between fraud and transacted stock value is positive. In investigating the increased fraud due to technological advancements, Ayani (2021) states that altered financial statements pose issues to the public and government. The higher the number of credit card transactions, the higher the fraud. Such frauds have economic and mental effects on organizations and clients. In analyzing the relationship between the personality attributes of fraudsters, Johnson et al. (2017) found that inactive personality traits commit fraud following managerial pressures. Still, proactive personalities do not follow managers' pressure to commit fraud.

According to Fraud Diamond, fraud happens when four factors exist: incentive, opportunity, rationalization, and capability. Opportunity paves the way for fraud, rationalization, and incentive to attract individuals; capable individuals take advantage of the observed opportunity (Wolfe and Hermanson, 2004). All fraud aspects except for opportunity have been closely analyzed. Opportunities arise from perceived weaknesses in the organization's controls, poor fraud detection, and low arrest situations (Dorminey et al., 2012). Therefore, an effective internal system plays a central role in detecting fraud and its timely prevention and cost minimization. By encouraging accountants to perform within the professional code of conduct, such a system enhances organizations' well-being, performance, satisfaction, commitment, and loyalty (Young et al., 2021). Namazi and Ebrahim (2015) found that organizational justice theory can affect the implementation of efficient fraud whistleblowing mechanisms. Although employees do not permanently commit fraud, they detect and disclose it (CFE, 2014). Employees' role as an internal control against fraud should not be overlooked, especially when staff have reasonable evidence and information regarding the fraud. Taheri Nia et al. (2022) found that internal controls are essential in preventing increased financial reporting risks by reducing the opportunities for fraudulent behaviors. Liang (2023) found that concentrated monitoring is positively linked with work satisfaction or the financial flow intention in a contract. This finding shows a direct relationship between enhancing concentration and work satisfaction. However, the psychological contract has a mediating effect on this relationship. Karani et al. (2022) state that implementing psychological contracts affects psychological outcomes: organizational commitment and job satisfaction. Peer support and participation have a positive mediating role in the relationship between psychological contracts and work results. Based on retaliation expectation, the psychological contract significantly overlaps with social exchange theory in that individual's social interactions rely on the other party's behavior. The psychological contract refers to unwritten reciprocal duties between employee and employer to achieve positive attitudinal and behavioral results. Minimizing the outcomes of violating these contracts requires paying close attention to their contents. Young et al. (2021) stated that psychological contracts show informal or non-contracting expectations. Understanding such contracts helps explain the expectations that were not met, including higher budget deficits and inefficient audit quality. Hammouri et al. (2022) stated that implementing psychological contracts affects efficiency and job satisfaction. Social exchange

theory states that both parties provide each other with significant advantages. Therefore, workplace relationship is a type of loyalty in exchange for organization and work's material incentives. Gallani et al. (2019) state that psychological contract breach mediates the relationship between budget type and false budget reporting. Sharma and Garg (2017) showed that employees can decide which organization to work for using psychological contracts. When these contracts are not violated, staff have a sense of belonging to the organization, and experienced employees' resignations from jobs will be reduced. According to Shahriari Nezhad and Ghaffari (2021), there is a significant relationship between succession planning, psychological contract, and leadership style. Managers can improve employees' mental health by knowing the importance of leadership style. Hemat Panah et al. (2017) reported a positive relationship between psychological contracts (transitional and relational) and citizenship performance. Foroghi et al. (2022) stated that fraud deliberately manipulates financial statements to mislead users. They showed that social responsibility reports negatively affect financial reporting. Based on this interaction, individuals are obliged and committed to helping those who have helped them. Such behavior is considered loyalty, in which the reciprocal regulations oblige staff to compensate for the past management's good behavior and the organization's support (Eisenberger, 2001). Golparvar et al. (2011) report a significant relationship between psychological contract breach, job satisfaction, and organizational commitment with deviated and unethical behaviors. Mortazavi et al. (2012) found 11 commitments from the university to its faculty members (academic staff) and seven from faculty members to the university. Following the foregone topics regarding psychological contract breach and organizational factors affecting an individual's tendency to disclose fraud in the banking system, the following hypotheses are proposed.

2.1 Research hypotheses

1. ***Interpersonal effect****:* If the employees' interpersonal relationship with the fraudster is positive, employees tend to disclose the fraud less.
2. ***Transactional relationship***: When employees owe (have a transactional relationship with them) to the fraudster, they tend to disclose the fraud less.
3. ***Financial instability****:* Employees tend to disclose fraud less if the organization is financially unstable.
4. ***Deficient organizational change***: If the organizational change is deficient, employees have less tendency to disclose fraud.
5. ***Organizational morality***: If the organizational morality is poor, employees have less tendency to disclose fraud.
6. ***Past fraud disclosure responses***: if managers respond poorly to past frauds, employees tend to disclose fraud less.
7. ***Organizational factors:*** Organizational factors affect fraud via psychological contract (mediating role).
8. ***Choosing the authorized recipient of the disclosed fraud***: Employees tend to disclose fraud to supervisors rather than internal auditors.

2.2 Conceptual research model

Figure (1) depicts the study's conceptual model based on the theoretical foundation, variables, and hypotheses. The left side demonstrates independent variables that developed the first 6 hypotheses. The right side shows the dependent variable of employees' tendency to disclose fraud. Finally, the psychological contract (the mediating variable and underlying proposition for H7) is shown in the middle of the figure.

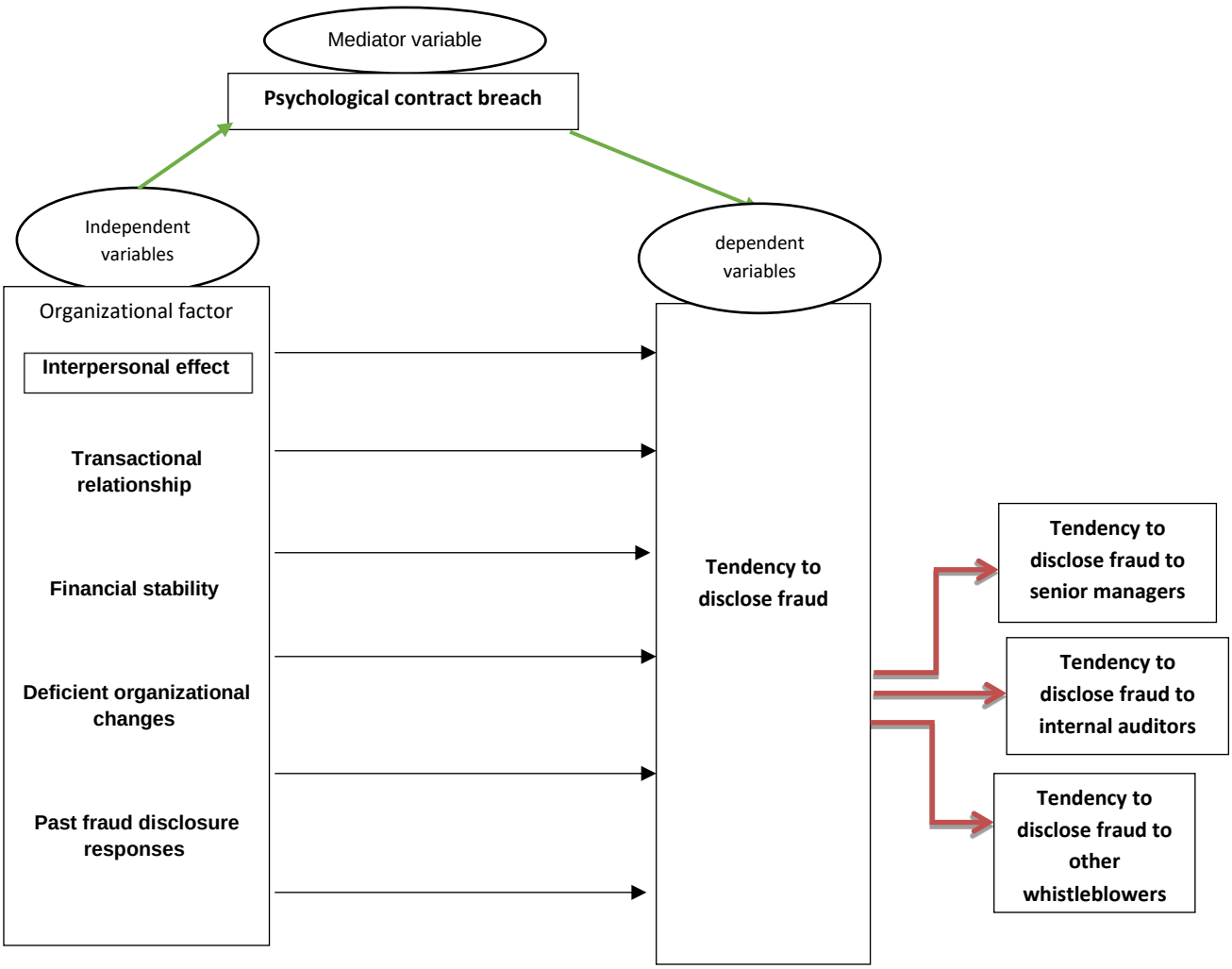

Figure 1. Study's conceptual model

3. Research Methodology

This paper is applied research with a survey methodology that uses questionnaires as its instrument to measure data. Then, the hypotheses were tested by structural equation modeling (Smart PLS v.3 Software). Cochran's formula was used to select the sample. Cochran's formula allows the researcher to choose the sample size according to the desired accuracy, the desired level of confidence, and the ratio of the estimated average of the characteristics of the desired trait in society. The data were collected via a questionnaire. By modelling the structural equations, this study investigates the impact of psychological contract breaches and organizational factors on the tendency to disclose fraud. The questionnaire has demographic and biographic data. The demographic information includes age, gender, work experience, education and organization rank. The statistical population includes employees and internal auditors in the banks listed on the stock exchange in 2022. 520 Questionnaires were distributed, and 450 questionnaires were answered. Consistent with Scheetz's (2016) standard questionnaire, this study uses three questionnaires that each address and measure two variables. The first questionnaire, with 20 questions, investigated the employees' interpersonal relationships, transactional relationships, staff tendency to disclose fraud to the relevant authority, and the mediating

roles. The second questionnaire, with 20 questions, addressed financial instability, deficient organizational changes, staff tendency to disclose fraud to the relevant authority, and mediating roles. The third questionnaire analyzed organizational morality, past fraud disclosure responses, the tendency to disclose fraud to the relevant authority, and mediating roles. The variables assessed in the questionnaire are ranked as follows: Tendency to disclose fraud is the dependent variable, and the likelihood of disclosing the fraud to senior management, internal auditors, and fraud whistleblowers is also analyzed. Independent variables are interpersonal effects, transactional relationships, financial stability, deficient organizational changes, organizational morality, and past fraud disclosure responses. The mediator variable creates an indirect link between two variables by channeling the impact of an independent variable on the dependent variable. The mediator variable in this study is the "psychological contract breach." The study's variables are analyzed as follows:

3.1 Variables measurement

3.1.1 Independent variables

The interpersonal effect*:* when the interpersonal relationship between employees and the fraudster is positive, employees are less incentivized to disclose fraud (questions: B-1, B2, B3, B4, B5 and D-1, D3, and E-1) (questionnaire 1).

The transactional relationship: when employees owe to the fraudster (they have a transactional relationship with each other), employees are less incentivized to disclose fraud (questions: B-1, B-2, B-3, B-4, B-5, and D-2, D-4, and E-2) (questionnaire 1).

Organization's financial stability: when an organization is financially unstable, employees are less incentivized to disclose fraud (questions: B-1, B-2, B-3, B-4, B-5, D-1, and E-1) (questionnaire 2).

Deficient organizational changes*:* when organizational changes are deficient, employees are less incentivized to disclose fraud (questions: B-1, B-2, B-3, B-4, B-5, D-2, and E-3) (questionnaire 2).

Organizational morality*:* when organizational morale is poor, employees are less incentivized to disclose fraud (questions: B-1, B-2, B-3, B-4, B-5, D-1, D-2, and E-1) (questionnaire 3).

Past fraud disclosure responses: when the managerial response to past disclosed fraud is poor, employees are less incentivized to disclose fraud (questions: B-1, B-2, B-3, B-4, B-5, D-3, and E-3) (questionnaire 3).

3.1.2 Dependent variables

Choosing recipient of the fraud disclosure*:* employees tend to disclose fraud to their supervisors rather than to internal auditors and fraud whistleblowers (questionnaires: 1, 2, and 3).

3.1.3 Mediator variable

Psychological contract*:* organizational factors affect fraud disclosure via psychological contracts (questions: B-1, B-2, B-3, B-4, B-5, D-2, and D-3) (questionnaires: 1, 2, and 3).

Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test are used to analyze sampling adequacy. KMO measure, or sampling adequacy, compares the correlation values with minor values. If values of this statistic are at least 50%, correlations are appropriate for factor analysis. Bartlett's statistics must be significant for factor analysis to be appropriate. Results are shown in Table 1.

Table 1. KMO and Bartlett test

KMO measure of sampling adequacy	**0.810**	
Bartlett's test	**….**	925.4
	p-value	0.000

Since the KMO measure is 0.810, the sample is adequate.

4. Findings

4.1 Checking the normality of the data

The Kolmogorov-Smirnov test is used to test the normality of the variables. The null hypothesis in this test is the normality of the variables. The null hypothesis is accepted if the significance level exceeds 0.05 and the variable is normal. The results of this test for the variables are presented in the table below.

Table 2. Checking the normality of the data

Variable	Kolmogorov-Smirnov -Z	P-value
Psychological contract breach	1.768	0.004
Interpersonal effect	2.165	0.000
Past fraud disclosure responses	2.348	0.000
Deficient organizational changes	1.381	0.044
Tendency to disclose fraud	1.967	0.001
Transactional relationship	2.546	0.000
Organizational morality	1.812	0.003
Financial stability	2.216	0.000

Table (2) shows that none of the variables have a normal distribution. However, PLS Software can be used to analyze the data.

4.2. Descriptive statistics (demographic information)

Table 3. Descriptive statistics for the statistical sample

Description	Relevant factors	Frequency	Frequency percentage
Gender	Male	335	82.720
	Female	70	17.280
Age	20-30 years	28	6.910
	31-40 years	311	76.790
	41-50 years	66	16.300
Education	BA	207	51.110
	MA	194	47.900
	Ph. D	4	0.990
Work experience	Accounting	279	68.890
	Management	126	31.110
	Less than 5 years	58	14.320
	5 to 15 years	292	72.100
	16 to 20 years	55	13.580
Job position	Expert	364	85.430
	Manager	59	14.570
Organization type	Private	270	66.670
	Public	135	33.330
Total		405	100

Table (3) shows demographic information. 82.72% of respondents were male and 17.28% were female. Most respondents (76.79%) were aged from 31 to 40. Most respondents (51.11%) had bachelor's degrees. 68.89% of respondents majored in accounting. 72.10% of respondents had work experience from 5 to 15 years, 85/89% were experts, and 14.57% were managers. 66.67% of

respondents worked in the private sector, while 33.33% worked in government organizations.

4.3 Construct reliability

Partial Least Square (PLS) calculates the reliability of each latent variable in the model rather than calculating the reliability of the whole model. Composite Reliability and Cronbach's alpha are used to find the reliability of the latent variables. Alpha Cronbach gives the same value to all the variables, but Composite Reliability specifies different values (relevant to variables' factor loading) to variables.

Table 4. Variables' reliability

Variable	Cronbach's alpha	Composite reliability	Raykov's Rho (reliability rho)
Psychological contract breach	0.779	0.858	0.791
Interpersonal effect	0.758	0.860	0.793
Past fraud disclosure responses	0.745	0.855	0.746
Deficient organizational changes	0.780	0.900	0.793
Tendency to disclose fraud	0.896	0.928	0.897
Transactional relationship	0.819	0.882	0.865
Organizational morality	0.713	0.820	0.741
Financial stability	0.831	0.890	0.841

According to Table (4), since the variables' reliability is higher than 0/70, they have an acceptable reliability.

4.4 Model's construct validity

4.4.1 Convergent validity

Validity determines to what extent the measuring instrument measures the mentioned feature. The average Variance Extracted (AVE) measures the variables' validity. AVE shows the correlation between each construct and its indexes. The higher the correlation, the greater the model's fit. Fornell and Larcker (1981) introduced a critical value of 0.5. Since AVE for all variables in Table (5) is higher than 0.5, the convergent validity for all variables is adequate.

Table 5. AVE for the latent variables

Variable	AVE value
Psychological contract breach	0.603
Interpersonal effect	0.673
Past fraud disclosure responses	0.663
Deficient organizational changes	0.819
Tendency to disclose fraud	0.763
Transactional relationship	0.657
Organizational morality	0.534
Financial stability	0.671

4.4.2 Divergent validity

Divergent validity shows the relation of the construct with its indexes compared to the relation of that construct with other constructs. Acceptable divergent validity indicates that a construct interacts more with its indexes than others. According to Fornell and Larcker (1981), if the AVE for each construct is higher than the variance common between that construct and other constructs (square of the correlation coefficient between constructs), then divergent validity is acceptable. In PLS, this is analyzed by a matrix that shows the correlation coefficient between constructs and the AVE square roots for each construct. If the elements in the main diagonal are higher than values in minor

diagonals, then divergent validity is acceptable.

Table 6. Divergent validity matrix using Fornell and Larcker statistic

	Psychological contract breach	Interpersonal effect	Past fraud disclosure responses	Deficient organizational changes	Tendency to disclose fraud	Transactional relationship	Organizational morality	Financial stability
Psychological contract breach	0.776							
Interpersonal effect	0.500	0.820						
Past fraud disclosure responses	0.615	0.580	0.814					
Deficient organizational changes	0.492	0.666	0.480	0.905				
Tendency to disclose fraud	0.619	0.699	0.650	0.662	0.873			
Transactional relationship	0.535	0.723	0.649	0.656	0.691	0.811		
Organizational morality	0.640	0.736	0.701	0.584	0.798	0.671	0.731	
Financial stability	0.575	0.718	0.662	0.553	0.688	0.665	0.727	0.819

4.5 Structural tests for the main model

4.5.1 Conceptual model's fit

Before testing the research hypotheses, factor analysis analyzes the measurement of the variables via a questionnaire. Figure (2) shows the research model using factor loading coefficients and t-statistics after eliminating questions with factor loading lower than 0.4.

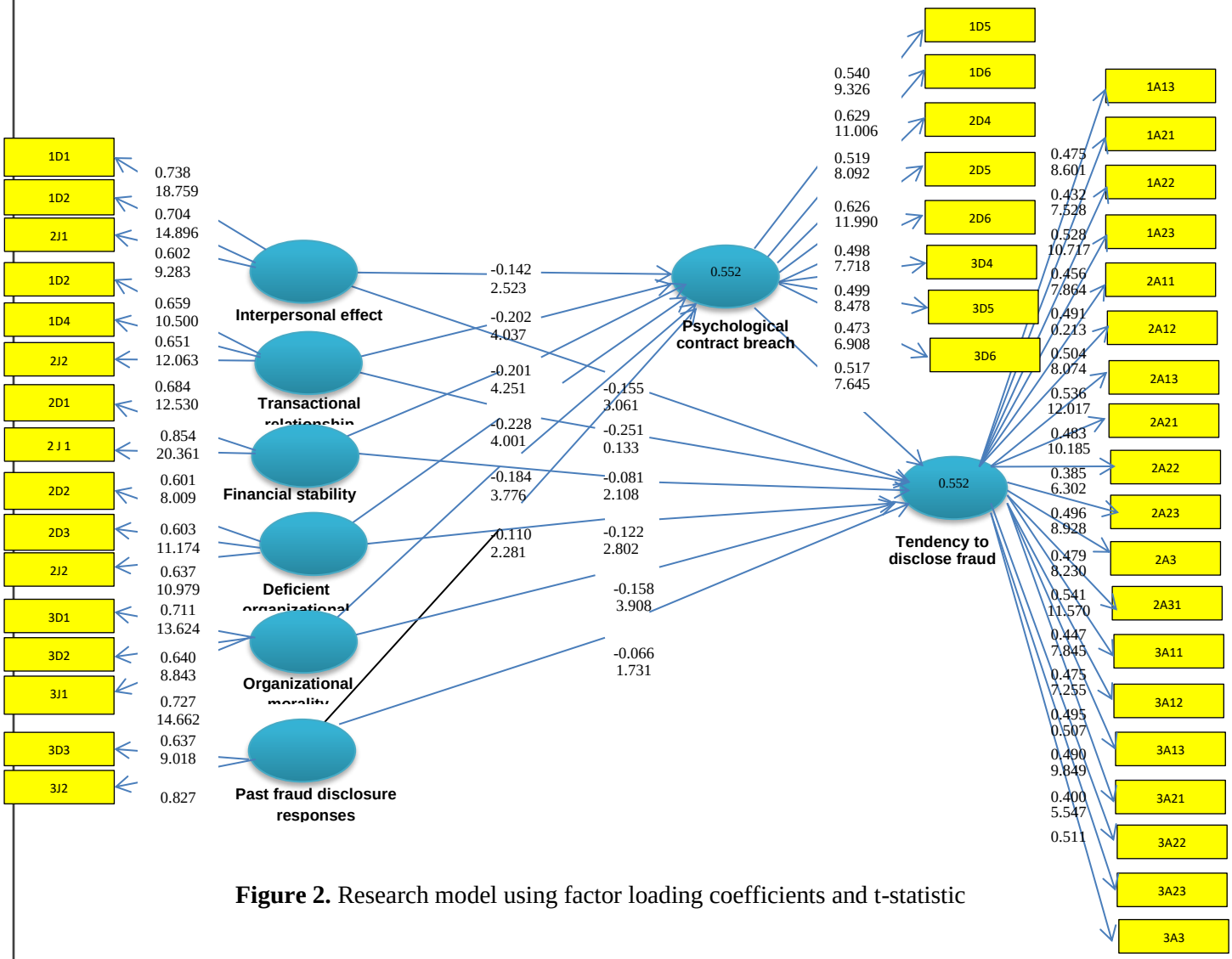

Figure 2. Research model using factor loading coefficients and t-statistic

Table 7. Path coefficients, t-statistic, and p-value using factor loading coefficients and t-statistic

Path	Coefficient	t-statistic	p-value
Psychological contract breach > tendency to disclose fraud	-0.277	-5.030	0.000
Interpersonal effect > psychological contract breach	-0.142	2.523	0.012
Interpersonal effect > tendency to disclose fraud	-0.155	3.961	0.000
Past fraud disclosure responses> psychological contract breach	-0.110	2.281	0.023
Past fraud disclosure responses> tendency to disclose fraud	-0.066	1.731	0.084
Deficient organizational changes> psychological contract breach	-0.228	4.001	0.000
Deficient organizational changes> tendency to disclose fraud	-0.132	2.802	0.005
Transactional relationship> psychological contract breach	-0.202	4.037	0.000
Transactional relationship> tendency to disclose fraud	-0.251	6.133	0.000
Organizational morality> psychological contract breach	-0.184	3.776	0.000
Organizational morality> tendency to disclose fraud	-0.158	3.908	0.000
Financial stability> psychological contract breach	-0.201	4.251	0.000
Financial stability> tendency to disclose fraud	-0.081	2.108	0.036

4.6 Hypotheses examination

4.6.1 First hypothesis

Interpersonal effect: when the interpersonal relationship between employees and fraudsters is positive, employees have less tendency to disclose fraud.

According to Table (7), since the p-value for the interpersonal effect on fraud whistleblowing is less than 0.05 (p≤.0.05), presuming that other factors are fixed, it is inferred that the interpersonal impact on fraud disclosure is significant. Based on the negative correlation coefficient, the interpersonal effect on fraud disclosure is negative. When the relationship between employees and fraudsters is positive, employees have less tendency to disclose fraud. Therefore, the first hypothesis is confirmed.

4.6.2 Second hypothesis

The transactional relationship: when employees owe to the fraudster (they have a transactional relationship with each other), employees are less incentivized to disclose fraud

According to Table (7), since the p-value for the transactional impact on fraud whistleblowing is less than 0.05 (p≤0.05), presuming that other factors are fixed, it is inferred that the transactional impact on fraud disclosure is significant. Based on the negative correlation coefficient, the transactional effect on fraud disclosure is negative. If employees owe the fraudster and are indebted to them (they have a transactional relationship with each other), employees' tendency to disclose fraud is poor. Therefore, the second hypothesis is confirmed.

4.6.3 Third hypothesis

Financial instability*:* when an organization is financially unstable, employees are less incentivized to disclose fraud.

According to Table (7), since the p-value for the impact of financial instability on fraud whistleblowing is less than 0.05 (p≤0.05), presuming that other factors are fixed, it is inferred that the transactional impact on fraud disclosure is significant. Based on the negative correlation coefficient, the instability effect on fraud disclosure is negative. When the organization is financially unstable, employees have a poor tendency to disclose fraud. Therefore, the third hypothesis is confirmed.

4.6.4 Fourth hypothesis

Deficient organizational changes: when organizational changes are deficient, employees are less incentivized to disclose fraud.

According to Table (7), since the p-value for the impact of deficient organizational changes on fraud whistleblowing is less than 0.05 (p≤0.05), presuming that other factors are fixed, it is inferred that the effect of deficient organizational changes on fraud disclosure is significant. Based on the negative correlation coefficient, the impact of deficient changes on fraud disclosure is negative. When the organization has unsuitable changes, employees' tendency to disclose fraud is poor. Therefore, the fourth hypothesis is confirmed.

4.6.5 Fifth hypothesis

Organizational morality: when organizational morale is poor, employees are less incentivized to disclose fraud.

According to Table (7), since the p-value for the impact of organizational morality on fraud whistleblowing is less than 0.05 (p≤0.05), presuming that other factors are fixed, it is inferred that the effect of organizational morality on fraud disclosure is significant. Based on the negative correlation coefficient, the impact of an organization's morale on fraud disclosure is negative. When an

organization's morale is poor, employees have a weaker tendency to disclose fraud. Therefore, the fifth hypothesis is confirmed.

4.6.6 Sixth hypothesis

Past fraud disclosure responses: when the managerial response to past disclosed fraud is poor, employees have a weak tendency to disclose fraud.

According to Table (7), since the p-value for the impact of past fraud disclosures on fraud whistleblowing is more than 0.05 ($p \leq 0.05$), presuming that other factors are fixed, it is inferred that the effect of past fraud disclosure on fraud whistleblowing is insignificant. Therefore, the sixth hypothesis is rejected.

4.6.7 Seventh hypothesis

Organizational factors: Organizational factors affect fraud whistleblowing through psychological contracts.

The impact of the independent variable on the mediator variable and the effect of the mediator variable on the dependent variable must be significant for H7 to be confirmed and the mediating role of the psychological contract to be approved. The H7 results for each independent variable are presented.

According to Table (7), since the p-value for both paths of interpersonal effect on psychological contract breach and the psychological contract breach impact on fraud disclosure is less than 0.05 ($p \leq 0.05$), the interpersonal relationship affects fraud disclosure through psychological contract.

According to Table (7), since the p-value for both paths of transactional effect on psychological contract breach and the psychological contract breach impact on fraud disclosure is less than 0.05 ($p \leq 0.05$), the transactional relationship affects fraud disclosure through psychological contract.

According to Table (7), since the p-value for both paths of financial stability effect on psychological contract breach and the psychological contract breach impact on fraud disclosure is less than 0/05 ($p \leq 0.05$), the financial stability affects fraud disclosure through psychological contract.

According to Table (7), since the p-value for both paths of deficient organizational change effect on psychological contract breach and the psychological contract breach impact on fraud disclosure is less than 0.05 ($p \leq 0.05$), the deficient change affects fraud disclosure through psychological contract.

According to Table (7), since the p-value for both paths of organizational morality effect on psychological contract breach and the psychological contract breach impact on fraud disclosure is less than 0.05 ($p \leq 0.05$), the organizational morality affects fraud disclosure through psychological contract.

According to Table (7), since the p-value for both paths of past disclosure response effect on psychological contract breach and the psychological contract breach impact on fraud disclosure is less than 0.05 ($p \leq 0.05$), the past disclosure responses affect fraud disclosure through psychological contract.

Since all the path coefficients for the impact of the independent variable on the mediator variable and the effect of the mediator variable on the dependent variable were significant, the H7 is confirmed. Therefore, organizational factors affect fraud disclosure through psychological contracts.

4.6.8 Eighth hypothesis

Choosing recipient of the fraud disclosure: employees tend to disclose fraud to their supervisors rather than to internal auditors and fraud whistleblowers.

Analysis of variance (ANOVA) test is used to test H8, which compares the extent of disclosed

fraud to supervisors, fraud whistleblowers, and internal auditors. The null hypothesis in this test assumes no difference between the named groups. Results are presented in Table (8).

Table 8. H8 results, tendency to disclose fraud and coefficient of determination

F statistic	P-value
18.36	0.000
Groups	Percentage
Supervisors	75.400
Fraud whistleblowers	13.600
Internal auditors	7.700
Variable	R2
Psychological contract breach	0.552
Tendency to disclose fraud	0.685

The null hypothesis is rejected since the significance level and the f statistic shown in Table (8) is zero and lower than α of 0.05. The rejected null hypothesis indicates a significant difference between the tendency to disclose fraud to supervisors, whistleblowers, and internal auditors. Therefore, since employees have a stronger tendency to disclose fraud to supervisors rather than to whistleblowers and internal auditors, H8 is confirmed.

R^2 is a criterion that links the measuring and structural parts of structural equation modeling and shows the impact of an extrinsic variable on an intrinsic variable. According to Table (8), the R^2 value for the intrinsic variables is strong.

4.7 F2 Effect size

The F2 value introduced by Cohen (1988) determines the intensity of the relationship between models' construct. F2 values of 0.02, 0.15, and 0.035 indicate small, medium, and large intensity effects. As demonstrated in Table (8), the intensity effect for past fraud responses, deficient organizational changes, and financial system stability is small, but such effect for other variables is medium.

Table 9. Effect size value (f2)

Variable	Tendency to disclose fraud
Psychological contract breach	0.109
Interpersonal effect	0.046
Past fraud disclosure responses	0.011
Deficient organizational changes	0.035
Transactional relationship	0.125
Organizational morality	0.053
Tendency to disclose fraud	0.015

4.8 Goodness of Fit Index

The overall model consists of the two measurement and structural models, which, if its fit is approved, then the fit analysis in a model is completed. The goodness of fit (GOF) measures the overall model's fit.

$$GOF = \sqrt{\overline{Communalities}.\overline{R^2}}$$

Where:

Communalities: the common values between each construct

R^2: the mean of r^2 values of the intrinsic model.

Wetzels et al. (2009) assigned three values of 0.01, 0.25, and 0.36 as small, medium, and large to

GOF. Since the GOF value in this study is 0.486, the model's fit is strong.

Square Root Mean Residual (SRMR), Root Mean Squared (RMS) Theta, and Normed Fit Index (NFI) are used to assess the model's overall fit. SRMR, RMS Theta, and NFI are used to measure the model's overall fit. Values lower than 0.08 or 0.1 for SRMR, values lower than 0.12 for RMS Theta, and values higher than 0.7 for NFI indicate that the model fits well. The results of these three indexes are shown in Table (10).

Table 10. SRMR, RMS Theta, NFI, and GOF measures

Measures	Obtained value	Acceptance criteria	Results
SRMR	0.060	Lower than 0.1 or 0.08	Acceptable
RMS Theta	0.119	Lower than 0.12	Acceptable
NFI	0.834	Higher than 0.7	Acceptable
Other statistical measures	value	GOF value	Results
R2	0.619		
Communality mean	0.382	0.486	Adequate GOF

According to Table (10), all the measurement indexes are acceptable and show that the model fits well.

5. Conclusion

Fraud in the banking system is a pervasive misconduct due to organizational complexity and transactions. Such unethical practice poses economic harm and mental disorders to organizations and clients. Therefore, the bank's reputation and client satisfaction might be damaged. Although individuals hold certain beliefs regarding behavior and ethics, occasionally, they might be forced to act against their beliefs. This is the case in employee fraud disclosure because when employees have established emotional (for example, a sense of loyalty) or mental relationships with their peers, they are less forthcoming about disclosing fraud. Our results showed a negative relationship between interpersonal effect and fraud disclosure. Transactional analysis refers to human interactions in that parties expect responses from each other. According to the reasoned action theory, most social actions are voluntarily controlled, which indicates that individuals have free options and decisions. In fraud whistleblowing by employees, employees' behavioral control and behavioral tendency determine fraud disclosure. Behavioral control factors refer to the belief in the presence or absence of resources and opportunities that can facilitate fraud disclosure. Blau proposes the exchange theory and regards it as the underlying and controlling element in human behavior that dominates group relationships. In the case of employee fraud disclosure, those who observe the fraudulent action or unethical behavior in banking fraud must have strong reasons to report and disclose it because if employees have a prior relationship (for example, if the fraudster has overlooked their fault or has done them a favor) with the fraudster, staff are mentally less forthcoming to report on their coworkers. Our results confirmed the mentioned behavior and showed that the transactional relationship between employees affects their fraud-disclosing tendency.

Financial stability is associated with present and future company policies. A financially stable policy is a long-term policy that does not need intervention in revenue and cost patterns. Since disclosing fraud or misconduct is not a usual course in employees' jobs, whistleblowing is difficult

for employees because it harms their peers but benefits the organization. Therefore, when the bank's financial system is unstable, fraud and corruption will be more prevalent. As a result, internal controls will be inefficient, and employees disclosing fraud will be regarded as disloyal to their peers. Hence, employees will be less forthcoming in fraud disclosure because the financial instability also leads to increased misbehavior and more reluctance to such behavior. Our results confirmed that financial instability negatively affects fraud disclosure. Organizational changes refer to solutions proposed by different groups in the organization. Results revealed that deficient organizational changes negatively affect fraud disclosure. Organizational morality includes regulations, codes, standards, and principles that provide the procedures for ethical and conductive behaviors in special organizational conditions. Misconduct practices are all unfair legal or illegal behaviors. If an unethical and improper practice prevails in an organization, employees consider such behaviors a typical act and show a poor tendency to disclose it. Our results showed a negative relationship between organizational morality and fraud disclosure. Banks need comprehensive plans and controls concerning fraud disclosure. Hence, when fraud occurs, they are ready to take the necessary actions to prevent future fraud and enhance the fraud disclosure situation for the whistleblower. Such controls must also consider the reluctance to disclose fraud. Results showed that the effect of past fraud disclosure responses on fraud disclosure is insignificant. Organizational factors can affect fraud disclosure indirectly through psychological contracts. When inter-organizational factors, including transactional relationships, override their beliefs, an employee's fraud disclosure can change by psychological contract breach. Banks must provide several easily accessed communication channels that can respect fraudsters' privacy. These communication channels must enable timely and appropriate fraud disclosure for employees to resolve unethical issues with supervisors. Our results showed that employees tend to disclose fraud to supervisors rather than fraud whistleblowers and internal auditors.

6. Future Research Directions

Based on H1 and H2 results, future studies can focus on defining organizational culture regarding employee relationships based on written or implied laws and regulations as internal controls to prioritize bank benefits over interpersonal and transactional relationships between employees. Therefore, if employees witness fraud, they tend to disclose fraud.

Based on H3 and H4 results, the most efficient internal controls for employee tendency to disclose fraud are stability and efficient changes that indicate managerial capability. When banks' financial stability is strong, employees are more forthcoming and willing to reveal frauds and violations to maintain that stability. Therefore, by providing financial stability, managers can enhance and strengthen employee motivations and tendencies to be more controlled and ethical.

Based on H5 and H6 results, banks can enhance the fraud disclosure tendency by encouraging whistleblowers, for example, by rewarding them and guarding their privacy. Therefore, if fraud occurs, others are more willing to disclose it instead of being reluctant or silent. Banks can design efficient internal controls by implementing laws and regulations concerning organizational ethics and employee relationships. When there is a framework for employee relationships, factors leading to remaining silent concerning fraud disclosure and whistleblowing will be decreased.

Based on H7 results, banks can use implied psychological contracts to encourage employees' tendency to disclose fraud and not to commit fraud. When employees regard a bank or organization's property as part of their properties, they are more alert to corruption and protect properties adequately. If these factors and organizational factors are met, banks will be provided with optimal and efficient situations and results. Management relies on employees against fraud. Vigilant employees with better financial monitoring can help detect and identify fraud and reduce any opportunity that leads to fraud.

Managers and auditors must be aware of the situations that might eventuate in a psychological contract breach; therefore, they can change and enhance those situations. Management can apply plans to encourage and motivate staff to disclose fraud. This action might require internal and external auditors to ask employees whether they would instantly reveal the illegal or unethical practice. After auditors know the answer, they might need to change the fraud assessment process. Based on H8 results, since employees have closer relationships with their supervisors, banks can ensure employees' protection and enhance their confidence concerning fraud disclosure by increasing supervisors' realm of authority and activity.

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RESEARCH ARTICLE

The Effect of Valuing Social Responsibility by Combining the Company's Life Cycle

Nahid Bigmoradi, Ahmad Khodamipour*, Omid pourheidari

Department of Accounting, Shahid Bahonar University of Kerman, Kerman, Iran

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Abstract

This research examines the effect of valuing social responsibility by combining the company's life cycle. In other words, by examining the role of life cycle stages on the relationship between high social responsibility and company value, the related literature on corporate social responsibility will be expanded to the less researched area in Iran. The statistical population of the research is the companies listed on the Tehran Stock Exchange. A sample of 115 companies from 2006 to 2021 is 1725 company-year. Multiple panel regression methods and STATA version 17 statistical software were used to test the hypotheses. The results show that although social responsibility and company value generally have a positive relationship, this relationship is conditional on the company's life cycle stages. The effect of each dimension of social responsibility on the company's value is different in the life cycle stages. Social responsibility's social and governance aspects predict higher firm value in all life cycle periods, but this effect is more significant in the decline period. The environmental aspect of social responsibility generally positively impacts the firm's value, but this effect is insignificant at different life cycle stages.

Keywords:
Company Value, Company Value, Environment, Social Responsibility

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*Corresponding Author: Ahmad Khodamipour
Email: khodamipour@uk.ac.ir
Tel: 09131420027
ORCID: 0000-0002-1620-0096

1. Introduction

Determining the value of a company and identifying factors affecting it in capital markets have always been challenging topics for investors and financial analysts (Thu and Khuong, 2023). The company's value is significant for the shareholders, investors, managers, creditors, and other stakeholders in their evaluation of the future of the company and its impact on the estimation of risk and return on investment and stock price. Therefore, according to the company's value, investors determine their priority in investment. They always seek to identify the factors affecting the company's value to determine its value realistically (Oh et al., 2021). In 1992, the United Nations Environment Programme Finance Initiative (UNEP FI) proposed that companies should only make investment decisions after fully considering all factors related to the environment, social responsibility, and corporate governance (Ahmad et al., 2023). Hence, the tendency of the company to use social responsibility disclosure to increase the reputation and, in turn, increase the value of the company is observed by recent studies (Fatima and Elbanna, 2023; Curras-Perez et al., 2023; Novitasari et al., 2023; Zhao et al., 2022; Oh et al., 2021; Hendratama and Huang, 2021).

While businesses are challenged to act in the best interests of all stakeholders, the question of whether being green is cost-effective and whether corporate social responsibility (CSR) has financial value remains a matter of debate (e.g., Long et al. al., 2022; Jiang et al., 2023). The lack of conclusive results from previous studies on the relationship between social responsibility and corporate value may be attributed to omitting an essential factor: the company's life cycle. Companies tend to develop their access to resources and management strategies at different stages of the life cycle, which in turn shape CSR behavior. Therefore, companies at the life cycle stages may have additional capabilities and motivations to demonstrate CSR activities, and the market may, in turn, value these initiatives differently at different stages. However, existing research on corporate social responsibility and value still needs to address the life cycle factor. Accordingly, this research examines the role of life cycle stages on the relationship between high social responsibility and firm value. The existing literature on social responsibility generally focuses on Western countries, and there is little empirical evidence on social responsibility in Iran. Zhao and Xiao (2019) argue that the company's ability and motivation to participate in social responsibility activities differ at different life cycle stages. Therefore, this study extends the research of Zhao and Xiao (2019) to examine the relationship between social responsibility and corporate value by combining the life cycle to capture the impact of corporate valuation decisions at different life cycle stages. Bajic and Yurtoglu (2018) argue that examining the overall measure of social responsibility raises concerns that the actual driver of corporate value may be hidden in the comprehensive assessment. Therefore, besides the general evaluation, the current study considers different dimensions of social responsibility to understand the other impacts of each social responsibility aspect, especially the environmental, social, and governance dimensions. This paper provides insights and implications for managers, standard setters, and other policymakers.

More specifically, investors are concerned about where and how managers invest. Hence, managers should develop appropriate CSR strategies at all life cycle stages to avoid adverse choices while meeting the needs of stakeholders. In addition, standard setters and other policymakers, in deciding to set requirements and policies, should recognize the differences in company resources and capabilities in life cycle stages, thus creating more reasonable CSR policies that are more relevant to companies at each life cycle stage. With this understanding, CSR will be successfully adopted in company policy decision-making, formulation, and implementation. A company's CSR investment can help external users of financial statements distinguish between more reliable versus less reliable financial reports and transparent versus opaque financial reports. The literature review, theoretical foundations, hypothesis development, research plan, results, discussion, and conclusions are discussed in the following.

2. Theoretical Principles and Hypothesis Development

2.1 Firm value

Under the premise of information asymmetric theory in the capital market, companies can distinguish themselves from competitors by disclosing high-quality information to access stakeholder resource support, increasing the company's value (Hendratama and Huang, 2021). Investors always seek to identify the factors affecting the value of the company to determine the value of the company realistically (Oh et al., 2021). Companies with higher social responsibility activity not only have more information transparency about social responsibility and strengthen interaction with stakeholders but also engage less in earnings management. In addition, social responsibility performance can improve the company's value. Still, when companies use social responsibility activities to cover managers' opportunistic behavior and divert stakeholders' attention from profit distortion by managers, the company's value decreases (Ahmad et al., 2023). Other studies state that by demonstrating socially responsible behavior, companies may attract and retain superior human resources, increase sales, gain the trust and cooperation of stakeholders, and increase company value (Hendratama and Huang, 2021). Bartlett and Bubb (2023), Fatima and Elbanna (2023), Curras-Perez et al. (2023), and Novitasari et al. (2023) believe that a strong reputation for social responsibility helps maintain corporate value.

2.2 Social responsibility

CSR is a self-regulatory business model that enables a firm to be socially responsible to itself, its shareholders, and the general public (Widyawati, 2020). Companies become aware of their influence on all elements of society, including the economic, social, and environmental facets, by adopting CSR (Chia et al., 2020). Although the definitions of "corporate social responsibility" are varied, the company's responsibility, along with profitability, includes social and environmental obligations to various stakeholders, has been widely accepted (Alshurafat et al., 2023). Environmental, social, and corporate governance (ESG) is an extension and enrichment of the socially responsible investment (SRI) concept and is an essential measure of corporate sustainable development (Nekhili et al., 2021). Moving toward social responsibility is an essential factor that leads to the continuation of the organization's movement in the long term. Although the primary goal of organizations is to increase efficiency and gain profit, this is not a sufficient guarantee for the survival and continuity of the desired activity of the organization, and organizations in the age of information and globalization to achieve success must respond appropriately to social and moral expectations and combine these expectations with economic goals in the best way to enable the achievement of higher goals (Kasradze et al., 2023). All the studies in this field (e.g. Fatima and Elbanna, 2023; Curras-Perez et al., 2023; Song et al., 2019; Zhang et al. (2021) show that Social responsibility positively affects the firm’s value. Corporate social responsibility has many aspects, and the spectrum covers many activities. Many previous studies have only focused on a single dimension of social responsibility (for example, Dickinson, 2011).

2.3 Life cycle

According to stakeholder theory and legitimacy theory, being green has value. However, stakeholders may have different social responsibility expectations at various stages of the firm's life cycle. Therefore, the company's social responsibility strategy should align with its life cycle stages (Hendratama and Huang, 2021). for firms in different life cycle phases, there are distinctions in the effect of CSR through establishing a good reputation to improve the relationship with the government

and banks, etc., and ultimately increasing the company's value (Khuong and Anh, 2023). according to stakeholder theory, firms participating in CSR activities can better align management with shareholder interests and obtain stakeholder trust and cooperation (Hendratama and Huang, 2021). Differences in capabilities, resources, and techniques that the company has at different life cycle stages affect the decisions made within the company. Generally, there are four typical stages of the company's life cycle: introduction, growth, maturity, and decline (Dickinson, 2011; Zhao and Xiao, 2019; Khuong and Anh, 2023).

Coelho et al. (2023) suggest that firms are not homogeneously related to the impact of CSR on financial constraints. Hence, investors can identify the firm's life cycle and consider it when deciding to minimize their investment risk. Curras-Perez et al. (2023) found that, in the emerging market, perceived environmental actions did not influence consumers' perceptions. Jiang et al. (2023) suggest that By the life cycle stage, the effect of environmental protection policy is mainly reflected in maturity and decline stage firms, and the impact on growth stage firms is not apparent. Zhao and Xiao (2019) investigated the relationship between the overall social responsibility score and financial constraints. They found that the average social responsibility score increases with the company's development but decreases during the decline stage. This paper extends the study of Zhao and Xiao (2019) and investigates the impact of valuing the corporate social responsibility decision at different life cycle stages.

2.4 The relationship between social responsibility and firm value

Corporate social responsibility plays a crucial role in creating a green image of the company and a green competitive advantage, increasing the firm’s value (Song et al., 2019). Zhang et al. (2021) argue that firm engagement in CSR allows companies to introduce and promote value and help maintain a good reputation in the market. Coelho et al. (2023) suggest that investing in social responsibility improves relations with the company's shareholders by demonstrating the company's healthy financial performance and efficient use of internal resources and reducing the possibility of incurring costs related to socially irresponsible behavior in the future. This, in turn, leads to an increase in the company's value. Based on stakeholder theory, researchers argue that the market perceives socially responsible companies positively (e.g., Khuong and Anh, 2023; Liu et al., 2023; Widyawati, 2020). Yoon et al. (2020) conclude that CSR helps firms have a strong connection with the customer, which increases firm market shares and customer willingness to pay, irrespective of the services and quality of the product. Among the few studies examining the relationship between different dimensions of social responsibility, Coelho et al. (2023) suggest that CSR directly impacts a company's financial performance, and this impact becomes more significant as the company's environmental, social, and governance (ESG) scores improve. Khuong and Anh (2023) confirm the positive effect of CSR on Firm Value. Besides, in most of the stages of the firm life cycle, Firm Value positively affects CSR practices, and this effect is highest in the growth stage. Widyawati (2020) and Coelho et al. (2023) argue that social responsibility's environmental, governance and social dimensions increase value. Caiazza et al. (2023) argue that social extent predicts higher firm value consistently. Xie et al. (2019) found that corporate governance plays the most crucial role instead of environmental and social issues. Overall, in line with stakeholder and legitimacy theories, previous studies show that being green has value because stakeholders generally have a positive attitude toward CSR initiatives. Now, according to the stated theoretical foundations and backgrounds, the first hypothesis of the research, along with its sub-hypotheses, are presented as follows:

H1*:* Social responsibility positively affects the firm’s value.

H1a: The environmental aspect of social responsibility positively affects the firm’s value.

H1b*:* The social aspect of social responsibility positively affects the firm’s value.

H1c: The governance aspect of social responsibility positively affects the firm's value.

2.5 The relationship between social responsibility and company value in life cycle stages

Social responsibility can help companies gain reputational benefits, leading to competitive advantages such as social legitimacy, increased sales, and attracting and retaining quality human resources, which increases company value (Liu et al., 2023; Thu and Khuong, 2023). Differences in capabilities, resources, and strategies that the company has at different life cycle stages affect the decisions made within the company (Khuong and Anh, 2023). Corporate life-cycle theory suggests that, in addition to age, firms differ significantly in size, profitability, willingness to protect the environment, and business strategy throughout the life cycle from birth to death. The key constraints faced at different stages also differ (Liu et al., 2023). CSR-level firms make prudent decisions after comprehensively assessing their development position, institutional environment, and resource endowment (Jiang et al., 2023). The first stage is often characterized by uncertainty and high risks, so companies may focus on other aspects of social responsibility, such as aspects related to employee welfare and customer-related issues, to allow companies to have a positive social image to legitimize and create their existence (Oh et al., 2021). The second stage is the growth stage; this stage requires companies to have strategy and innovation to survive in the competition (Novitasari et al., 2023). The maturity stage occurs when the sales level stabilizes. Mature companies can afford to engage in social responsibility. Market growth and profitability stagnate due to external challenges and lack of innovation in the next stage (decline). Companies in this stage are likely to engage in social responsibility activities and use reputational capital to counter potential poor performance in the future (Widyawati, 2020; Khuong and Anh, 2023). Among the few studies that examine the relationship between social responsibility and corporate value in the life cycle stages, Hendratama and Huang (2021) argue that the social aspect of CSR in the introduction and maturity stages, the governance in the stages of growth and decline, and the environmental aspect only affect the firm's value in the next stage of the life cycle. Jiang et al. (2023) found that the effect of environmental protection policy is mainly reflected in the maturity and decline stage, and its effect is not evident in the growth stage. Thu and Khuong (2023) found that the introduction and growth stages positively relate to CSR disclosure, but companies in the decline and stagnation stages do not focus much on CSR disclosure.

Accordingly, this study expects that the market will evaluate CSR initiatives at different stages of the life cycle because companies' conditions, resources, and capabilities differ based on their life cycle. Now, according to the stated theoretical foundations and backgrounds, the second hypothesis of the research, along with its sub-hypotheses, are presented as follows:

H2: The relationship between social responsibility and corporate value differs in the life cycle stages.

H2a: The environmental dimension of corporate social responsibility positively affects the firm's value.

H2b: The social dimension of corporate social responsibility positively affects corporate value.

H2c: Corporate social responsibility's governance dimension positively affects the firm's value.

3. Research Methodology

3.1 The statistical population of the research

The statistical population of the research is the companies listed on the Tehran Stock Exchange. The research sample was selected from the manufacturing companies with an active and continuous presence in the stock market from 2006 to 2021, and their trading break is at most three months. Of

course, the companies whose required data are not available were excluded. Finally, 115 (1725 year-company) were considered a statistical sample.

Table 1. Statistical population

Characteristics of companies	No.
All companies listed on the stock exchange and Over the counter at the end of 2021	6120
Companies whose financial year end is not in March	1020
Banks, insurance and financial intermediaries, and investment institutions	1605
Companies that were canceled during the research period	90
Companies that have been listed after the desired year of the study	960
Other problems (change of fiscal year, incomplete information, suspension of transactions for more than 3 months)	720
Selected companies with no problems and are members of the statistical community.	1725

3.2 Data analysis method

At first, we prepared a checklist of things that indicate social responsibility according to Zhao and Xiao (2019) and Hendratama and Huang (2021) in three sections with the titles of social, environmental, and governance dimensions based on the conditions in Iran. This paper includes the environmental extent (environment), which consists of the use of resources, dissemination, and innovation of the product; the social dimension (social), which includes the workforce, human rights, society, and product responsibility; and the corporate governance dimension (governance) which consists of the company's commitment and effectiveness covering the principles of corporate governance, shareholder behavior, and strategy. According to previous studies, this paper uses Tobin's Q as the dependent variable to obtain the firm's value (e.g., Chung et al., 2018; Thu and Khuong, 2023).

According to Dickinson (2011) and Zhao and Xiao (2019), this research classifies companies into four life cycle stages (i.e., introduction, growth, maturity, and decline/decline), which we did not consider the introduction stage because the research community of accepted companies It is in the Tehran Stock Exchange and these companies have passed the introduction stage. This study also includes several control variables found in previous studies (e.g., Chung et al., 2018; Zhao and Xiao, 2019).

3.3 Research models

We use model one to test the first hypothesis.

(1)

$$\text{Firm Value} = \beta 0 + \beta 1\text{CSR} + \beta 2\text{Size} + \beta 3\text{Age} + \beta 4\text{Lev} + \beta 5\text{AssetGrowth} + \beta 6\text{ROA} + \text{FE} + \varepsilon$$

Dependent variable*:* is the firm's value. According to previous studies, this paper uses Tobin's Q to obtain the firm's value (e.g., Chung et al., 2018; Thu and Khuong, 2023). Tobin's Q is measured by the market value of equity minus the book value of equity plus total assets divided by total assets.

Independent variable*:* CSR. According to the study by Hendratama and Huang (2021), the corporate social responsibility score is the total strengths minus the total concerns in the following three categories: social, environmental, and governance.

Control variables*:*

Size: Company size is the natural logarithmic value of total assets (Chung et al., 2018).

Age: The firm's age is the number of years the company has been a stock exchange member (Hendratama and Huang, 2021; Zhao and Xiao, 2019).

Lev: The firm's leverage is the ratio of the total debt to the company's total assets (Zhao and Xiao, 2019).

Asset Growth: Asset growth is the percentage change in total assets compared to the previous year (Zhao and Xiao, 2019).

ROA: Profitability is the ratio of net income to the average total assets of the company (Hendratama and Huang, 2021).

We use model two to test the first sub-hypotheses.

(2)

$$\text{Firm Value} = \beta_0 + \beta_1\text{Environment} + \beta_2\text{Social} + \beta_3\text{Governance} + \beta_4\text{Size} + \beta_5\text{Age} + \beta_6\text{Lev} + \beta_7\text{AssetGrowth} + \beta_8\text{ROA} + \text{FE} + \varepsilon$$

The second model is set to investigate the effects of different aspects of CSR on company value. The dependent variable of the second equation is Firm Value. The independent variables include the checklist scores of the three dimensions of CSR, i.e., environmental, social, and corporate governance. Control variables remain constant.

We use model three to test the second hypothesis and its sub-hypotheses.

To test this hypothesis, we use the first model, and instead of firm value, we substitute firm value in life cycle stages.

(3)

$$\text{Firm Value} = \beta_0 + \beta_1\text{Environment} + \beta_2\text{Social} + \beta_3\text{Governance} + \beta_4\text{Size} + \beta_5\text{Age} + \beta_6\text{Lev} + \beta_7\text{AssetGrowth} + \beta_8\text{ROA} + \text{FE} + \varepsilon$$

Life cycle

To separate the different stages of the companies' life cycle, the model of Osta and Gheitasi (2012) was used. Based on the model, the variables (sales growth, capital expenditures, company life) were calculated separately for the sample companies. Then, the calculated variables were standardized and allocated according to the years of the respective companies in the sample. The sample companies are divided into three groups: growing companies with a score of 3, mature companies with a score of 2, and declining companies with a score of 1. The scores of all three criteria are added for the company, and the combined score of each company is obtained. Then, based on this score, companies are divided into three categories: growing, mature, and declining.

Table 2. Classification of companies

Life cycle	Sales growth	Change in capital expenditure	Life of the company
Growth	High	high	young
Maturity	Medium	Medium	Mature
Decline	down	down	Old

4. Findings

4.1 Descriptive statistics

The summary of the characteristics of the descriptive statistics related to the used variables is presented in Table 3.

Table 3. Descriptive statistics of quantitative research variables

Role	Variable	Symbol	Min	Max	Mean	Standard deviation
Dependent	The value of the company at the end of the year t	Q Tobin	0.556	201.863	3.108	6.317
	Unexpected cash flow at time t	UCFO	-2.911	2.954	-0.006	0.893
Independent	Environmental component	Environment Scores	0.000	8.000	5.445	3.182
	Social component	Social Scores	3.000	12.000	8.184	2.461
	component of governance	Governance Scores	5.000	8.000	6.803	0.989
	social responsibility	CSR Scores	8.000	28.000	20.432	5.619
Control	size of the company	Size	0.992	20.769	13.972	1.951
	Age of the company	Age	1.000	70.000.	22.290	13.668
	lever	Lev	0.060	1.825	0.579	0.183
	Asset Growth	Asset Growth	-0.642	7.146	0.239	0.393
	profitability	ROA	-0.581	0.673	0.135	0.130

The descriptive statistics in Table 3 show that among the companies and during the years investigated, the minimum value was reported as 0.556 and the maximum as 201.863. In other words, there is an average firm value of 3.108 with a standard deviation of 6.317 around the mean. The company's social responsibility has the lowest and highest value, with 8 and 28, respectively. The mean of CSR is 20.432, and the dispersion around the mean is 5.619.

Table 4. The frequency distribution table of social responsibility variables

Variable (CSR_code)	Abundance	Frequency
Down	353	20.500
Top	1372	79.500
Total	1725	100.000

Table 4 shows that among the companies under study, 1372 companies (79.50%) and 353 companies did not show high social responsibility, equaling 20.50% of the sample.

Table 5. The frequency distribution table of the life cycle variable

Variable (Long_life)	Abundance	Frequency	Valid frequency percentage
Decline	500	28.950	31.090
Maturity	653	37.810	40.610
Growth	455	26.350	28.300
Total	1608	93.110	100.000
Lost	117	6.780	
Total	1725	100.000	

Table 5 shows that among the companies under study research, the number of companies in the period of decline in terms of the life cycle was 500 (31.09 percent), and the companies in the maturity period were 653 (40.61 percent). The number of companies in the growth period was 455 (28.30 percent).

Considering the points of social responsibility, only in 2019, it is impossible to carry out a fixed panel effects test, and as a result, the F-Limer test to identify the appropriate test. Therefore, in the first hypothesis, the ordinary regression model was performed by controlling the effects of year and company, and its results are as follows:

Table 6. The regression results of the lowest ordinary square powers related to the first hypothesis

Model: ordinary least squares regression						
Dependent variable: company value						
Variable	**Symbol**	**Coefficient**	**The standard error**	**t statistic**	**p-value**	**Collinearity**
Width from the origin	C	1.001	0.024	42.325	<0.001	
Social responsibility	CSR Scores	0.067	0.006	11.386	<0.001	1.270
size of the company	Size	-0.037	0.022	-1.707	0.088	1.292
Life of the company	Age	-0.006	0.004	-1.633	0.103	1.042
lever	Lev	-0.996	0.007	-148.96	<0.001	1.578
Asset growth	Asset Growth	0.004	0.003	1.538	0.124	1.128
profitability	ROA	-0.014	0.010	-1.452	0.147	1.719
	The coefficient of determination				0.753	
	Watson camera statistics				1.893	
	F statistic of the significance test of the model				815.680	
	p-value of the significance test of the model				<0.001	

To check the first hypothesis, the p-value related to social responsibility and company value ($p<0.001$) is less than the error level of 0.05 and even less than 0.001, so this effect is significant. In other words, the relationship between social responsibility and company value is significant, and the intensity of this relationship is 0.067, so the first hypothesis is confirmed. Also, the test statistic and the significance p-value of the whole model show that the whole model is significant, and the variables in the model explain 75.3% of the changes related to the company's value.

The regression results of the lowest ordinary square powers for the impact of social responsibility dimensions on the value of the company are as follows:

Table 7. The regression results of the least ordinary square powers related to the first sub-hypotheses

Collinearity	**p-value**	**t statistic**	**The standard error**	**Coefficient**	**Symbol**	**Variable**
	<0.001	44.278	0.022	0.976	C	Width from the origin
2.030	0.004	-2.849	0.004	-0.012	Environment Scores	Environmental dimension
2.200	<0.001	8.154	0.007	0.054	Social Scores	social dimension
1.248	<0.001	15.551	0.008	0.128	Governance Scores	governance dimension
1.332	<0.001	-4.345	0.021	-0.090	Size	size of the company
1.048	0.139	-1.479	0.004	-0.005	Age	Life of the company
1.617	<0.001	-160.899	0.006	-1.010	Lev	lever
1.125	0.115	1.575	0.002	0.004	Asset Growth	Asset growth
1.751	<0.001	-3.738	0.009	-0.035	ROA	profitability
The coefficient of determination					0.711	
Watson camera statistics					1.783	
F statistic of the significance test of the model					13.694	
p-value of the significance test of the model					<0.001	

The above table will be used to assess hypotheses H1a to H1c.

Considering that the significance level of the overall model is less than 0.001, it means that at least one of the variables in the model has a significant effect on the dependent variable of the company's value. In each of the hypotheses, H1a to H1c, the impact of social responsibility components on the company's value is determined.

According to the test statistic and the significant p-value of the whole model, it can be concluded that the variables in the model explain 71.1% of the changes related to the company's value.

The p-value related to the environmental component of social responsibility and company value

(p=0.004) is less than the error level of 0.05, so this effect is significant. The value of the effect coefficient is equal to -0.012. Therefore, hypothesis H1a is confirmed.

The p-value related to the social component of social responsibility and company value (p<0.001) is less than the error level of 0.05, so this effect is significant. The value of the impact factor is equal to 0.054. Therefore, hypothesis H1b is confirmed.

The P-value related to the governance component of social responsibility and corporate value (p<0.001) is less than the error level of 0.05, so this effect is significant; the impact factor value is equal to 0.128; so, hypothesis H1c is confirmed.

To carry out and examine the second hypothesis, the model of the first hypothesis is used separately for life cycle stages.

Table 8. The regression results of the least ordinary square powers related to the second hypothesis

Model: ordinary least squares regression
Dependent variable: company value

Collinearity	p-value	t statistic	The standard error	Coefficient	Symbol	Variable (Growth period)
	<0.001	26.623	0.039	1.039	C	Width from the origin
1.244	<0.001	6.909	0.010	0.068	CSR Scores	Social responsibility
1.410	0.063	-1.861	0.037	-0.069	Size	size of the company
1.058	0.443	-0.768	0.006	-0.005	Age	Life of the company
1.746	<0.001	-86.395	0.012	-1.003	Lev	lever
1.242	0.161	1.405	0.004	0.006	Asset Growth	Asset growth
1.977	0.572	-0.565	0.016	-0.009	ROA	profitability
The coefficient of determination					0.719	
Watson camera statistics					1.905	
F statistic of the significance test of the model					90.413	
p-value of the significance test of the model					<0.001	

Collinearity	p-value	t statistic	The standard error	Coefficient	Symbol	Variable (Maturity period)
	<0.001	38.015	0.026	0.979	C	Width from the origin
1.319	<0.001	5.654	0.006	0.035	CSR Scores	Social responsibility
1.254	0.709	0.374	0.023	0.009	Size	size of the company
1.027	0.116	-1.574	0.004	-0.006	Age	Life of the company
1.505	<0.001	-145.073	0.007	-1.012	Lev	lever
1.246	0.597	-0.530	0.005	-0.003	Asset Growth	Asset growth
1.886	0.641	-0.467	0.012	-0.005	ROA	profitability
The coefficient of determination					0.712	
Watson camera statistics					1.804	
F statistic of the significance test of the model					78.675	
p-value of the significance test of the model					<0.001	

Collinearity	p-value	t statistic	The standard error	Coefficient	Symbol	Variable (decline period)
	<0.001	16.964	0.058	0.991	C	Width from the origin
1.293	<0.001	7.101	0.015	0.106	CSR Scores	Social responsibility
1.297	0.107	-1.613	0.053	-0.086	Size	size of the company
1.066	0.940	0.075	0.010	0.001	Age	Life of the company
1.581	<0.001	-56.980	0.017	-0.950	Lev	lever
1.084	0.166	1.388	0.005	0.007	Asset Growth	Asset growth
1.585	0.508	-0.662	0.025	-0.017	ROA	profitability
The coefficient of determination					0.734	
Watson camera statistics					1.788	
F statistic of the significance test of the model					823.546	
p-value of the significance test of the model					<0.001	

To investigate the second hypothesis, ***in the growth period***, the p-value related to social responsibility and company value (p<0.001) is less than the error level of 0.05 and even less than 0.001, so this effect is significant, and the intensity of this relationship is equal to 0.068. The second hypothesis of the research is confirmed. Also, the test statistic and p-value of the significance of the whole model show that the whole model is significant, and the variables in the model explain 71.9% of the changes related to the company's value.

In the maturity period, the p-value related to social responsibility and company value (p<0.001) is less than the error level of 0.05 and even less than 0.001, so this effect is significant. The intensity of this relationship is equal to 0.035, and the second hypothesis of the research is confirmed. Also, the test statistic and the significance p-value of the whole model show that the whole model is significant, and the variables in the model explain 71.2% of the changes related to the company's value.

In the decline period, the p-value related to social responsibility and company value (p<0.001) is less than the error level of 0.05 and even less than 0.001, so this effect is significant, and the intensity of this relationship is equal to 0.106. The second hypothesis of the research is confirmed. Also, the test statistic and the significance p-value of the whole model show that the whole model is significant, and the variables explain 73.4% of the changes related to the company's value.

The regression results of the least common square powers for the impact of social responsibility dimensions on the value of the company in the stages of the life cycle are as follows:

Table 9. The regression results of the least ordinary square powers related to the second sub-hypotheses

Model: ordinary least squares regression						
Dependent variable: company value						
Variable (Growth period)	**Symbol**	**Coefficient**	**The standard error**	**t statistic**	**p-value**	**Collinearity**
Width from the origin	C	1.013	0.036	28.208	<0.001	
Environmental dimension	Environment Scores	-0.011	0.007	-1.686	0.092	2.076
social dimension	Social Scores	0.058	0.011	5.223	<0.001	2.210
governance dimension	Governance Scores	0.124	0.013	9.434	<0.001	1.210
size of the company	Size	-0.119	0.035	-3.445	0.001	1.449
Life of the company	Age	-0.004	0.006	-0.741	0.459	1.058
lever	Lev	-1.017	0.011	-94.475	<0.001	1.787
Asset growth	Asset Growth	0.006	0.004	1.561	0.119	1.246
profitability	ROA	-0.026	0.015	-1.782	0.075	2.004
The coefficient of determination				0.623		
Watson camera statistics				1.834		
F statistic of the significance test of the model				12.990		
p-value of the significance test of the model				<0.001		
Variable (Maturity period)	**Symbol**	**Coefficient**	**The standard error**	**t statistic**	**p-value**	**Collinearity**
Width from the origin	C	0.955	0.024	39.162	<0.001	
Environmental dimension	Environment Scores	-0.007	0.004	-1.733	0.084	2.089
social dimension	Social Scores	0.026	0.007	3.862	<0.001	2.258
governance dimension	Governance Scores	0.084	0.009	9.448	<0.001	1.245
size of the company	Size	-0.017	0.022	-0.780	0.436	1.289
Life of the company	Age	-0.005	0.004	-1.554	0.121	1.039
lever	Lev	-1.023	0.007	-154.541	<0.001	1.555

Asset growth	Asset Growth	-0.003	0.005	-0.579	0.563	1.268
profitability	ROA	-0.022	0.011	-2.023	0.044	1.949
The coefficient of determination				0.567		
Watson camera statistics				1.690		
F statistic of the significance test of the model				10.112		
p-value of the significance test of the model				<0.001		
Variable (decline period)	**Symbol**	**Coefficient**	**The standard error**	**t statistic**	**p-value**	**Collinearity**
Width from the origin	C	0.972	0.054	18.074	<0.001	
Environmental dimension	Environment Scores	-0.013	0.010	-1.290	0.198	2.015
social dimension	Social Scores	0.079	0.016	4.869	<0.001	2.148
governance dimension	Governance Scores	0.180	0.021	8.698	<0.001	1.330
size of the company	Size	-0.173	0.050	-3.457	0.001	1.352
Life of the company	Age	0.003	0.009	0.281	0.779	1.071
lever	Lev	-0.964	0.016	-62.052	<0.001	1.622
Asset growth	Asset Growth	0.007	0.005	1.403	0.161	1.092
profitability	ROA	-0.045	0.023	-1.920	0.055	1.612
The coefficient of determination				0.536		
Watson camera statistics				1.857		
F statistic of the significance test of the model				10.065		
p-value of the significance test of the model				<0.001		

The above table is used to check hypotheses H2a to H2c.

Considering that the significance level of the overall model is less than 0.001 in all three life cycle states, it means that at least one of the model's variables significantly affects the dependent variable of the company's value. In each of the hypotheses, H2a to H2c, the impact of social responsibility components on the company's value in three life cycle periods is determined.

4.2The environmental component of social responsibility

In the growth period, the p-value related to the environmental component of social responsibility and company value (p=0.092) is more significant than the error level of 0.05, so this effect is insignificant. Therefore, hypothesis H2a is not confirmed in the growth period.

In the maturity period, the p-value related to the environmental component of social responsibility and company value (p=0.084) is higher than the error level of 0.05, so this effect is insignificant. Therefore, hypothesis H2a is not confirmed.

In the decline period, the p-value related to the environmental component of social responsibility and company value (p=0.198) is more significant than the error level of 0.05, so this effect is insignificant. Therefore, hypothesis H2a is not confirmed in the decline period.

4.3 The social component of social responsibility

In the growth period, the p-value related to the social component of social responsibility and company value (p<0.001) is less than the error level of 0.05, so this effect is significant. The value of the influence coefficient is equal to 0.124. Therefore, hypothesis H2b is confirmed during the growth period.

In the maturity period, the p-value related to the social component of social responsibility and company value (p<0.001) is less than the error level of 0.05, so this effect is significant. The value of the influence coefficient is equal to 0.084. Therefore, the hypothesis H2b is confirmed in the period of maturity.

In the decline period, the p-value related to the social component of social responsibility and company value (p<0.001) is less than the error level of 0.05, so this effect is significant. The value of

the influence coefficient is equal to 0.180. Therefore, the hypothesis H2b is confirmed in the period of decline.

4.4 The governance component of social responsibility

In the growth period, the p-value related to the governance component of social responsibility and company value ($p<0.001$) is less than the error level of 0.05, so this effect is significant. The value of the influence coefficient is equal to 0.058. Therefore, the H2c hypothesis is confirmed in the growth period.

In the maturity period, the p-value related to the governance component of social responsibility and company value ($p<0.001$) is less than the error level of 0.05, so this effect is significant. The value of the influence coefficient is equal to 0.026. Therefore, the hypothesis H2c is confirmed in the period of maturity.

In the period of decline, the p-value related to the governance component of social responsibility and company value ($p<0.001$) is less than the error level of 0.05, so this effect is significant. The value of the influence coefficient is equal to 0.079. Therefore, the H2c hypothesis is confirmed in the period of decline.

5. Discussion and Conclusion

Determining the firm's value is one of the crucial factors in the investment process. Therefore, investors always seek to identify the factors affecting the value of the company to determine the value of the company realistically (Oh et al., 2021). Based on this, the company's tendency to use social responsibility disclosure to increase its reputation and, in turn, increase company value is seen by recent studies (Fatima and Elbanna, 2023; Curras-Perez et al., 2023; Novitasari et al., 2023; Zhao et al., 2022; Oh et al., 2021; Hendratama and Huang, 2021). According to stakeholder theory and legitimacy theory, being green has value. However, stakeholders may have different social responsibility expectations at the company's life cycle stages. Therefore, the company's social responsibility strategy should be under its life cycle stages (Hendratama and Huang, 2021). This research examines the valuation effect of CSR by incorporating the firm's life cycle and argues that the lack of conclusive results from previous studies on the relationship between CSR and firm value may be attributed to the omission of an essential factor, the firm's life cycle.

Like previous studies (e.g., Hendratama and Huang, 2021; Coelho et al., 2023; Zhao and Xiao, 2019), the first empirical findings show that CSR positively and significantly impacts company value. Therefore, the findings support the theories of stakeholders and legitimacy and show that social responsibility is value-added. This, in turn, leads to a positive market response through higher company value concerning different dimensions of CSR. This paper shows that all three dimensions of CSR, environmental, social, and governance, positively and significantly affect company value. When starting or investing in a business, companies and investors should pay special attention to environmental, social, and governance issues. Although this research finds a significant relationship between CSR and company value, this relationship differs in the life cycle stages. The findings show that CSR's social and governance dimensions positively affect the company's value in the growth stage. Companies in the early stages of their life cycle typically have a different reputation than companies in the mature or later stages. Therefore, they may engage in socially relevant activities to legitimize their existence and ensure continued success. In the maturity stage, CSR's social and governance dimension positively and significantly affects the company's value. In the recession/decline stages, the findings also show that CSR's social and governance aspects are evaluated more positively. In this stage, companies may engage in CSR activities to use reputational

capital to avoid the possibility of poor performance in the future. In general, social responsibility's social and governance dimension predicts higher company value in all life cycle periods, but this effect is more significant in the decline period. The environmental dimension of social responsibility generally positively affects firm value, but this effect is insignificant at different life cycle stages. Almost all studies conducted in this field confirm the initial research results that CSR has a positive effect on company value, such as Jiang et al. (2023), Hendratama and Huang (2021), Thu and Khuong (2023), Xie et al. (2019), Zhao et al., (2022), Oh et al., (2021), Widyawati, (2020) The difference in the impact of social responsibility dimensions in the stages of the life cycle is that, Xie et al. (2019), Hendratama and Huang (2021), Thu and Khuong (2023), similar to the present study, found that the dimension of corporate and social governance plays the most critical role in the stages of the life cycle, instead of environmental issues. However, Bajic and Yurtoglu (2018) and Liu et al. (2023) argue that only the social dimension consistently predicts higher firm value.

6. Practical implications

Research related to CSR in Iran is an area that has yet to be studied, and more attention has been devoted to the different dimensions of CSR and the life cycle in the area of priorities related to CSR for decision-making.

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RESEARCH ARTICLE

The Effect of Some Macroeconomic Variables on the Performance Indicators of Companies Listed on The Tehran Stock Exchange During Sanction Periods (before and after the JCPOA)

Hashem Manzarzadeh Tamam, Mohammad Reza Abbaszade*, Reza Hesarzade, Seyed Saeed Malek Sadat

Department of Accounting, Faculty of Economics & Administrative Sciences, Ferdowsi University of Mashhad, Mashhad, Iran

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Abstract

This study aims to investigate the effect of some macroeconomic variables on the performance indicators of companies listed on The Tehran Stock Exchange (selected industries) during sanction periods (before and after the Joint Comprehensive Plan of Action). This research is an applied and correlated study using deductive-inductive reasoning. Collected data is analyzed (financial reports). Therefore, this study is ex post facto. The sample of this study was collected over 11 years, spanning from 2010 to 2020, and included 181 firms listed on the Tehran Stock Exchange. Multivariate linear regression is conducted to test the hypotheses. The findings indicate that sanctions (both pre-and post-JCPOA) acted as moderators in the relationship between exchange rate fluctuations and firms' added value. Except for the automotive industry, sanctions (pre-and post-JCPOA) moderated the relationship between foreign investment and corporate investment activities in all industries. Sanctions (pre-and post-JCPOA) moderated the relationship between the production price index and corporate profitability in all industries except the automotive industry. Sanctions (pre-and post-JCPOA) moderated the relationship between the import of raw materials for intermediate and capital goods and corporate operational activities. America's withdrawal from Iran's nuclear deal, JCPOA, in 2018 caused great damage to Iran's economy. These sanctions are expected to have a more destructive impact on business enterprises in the post-JCPOA era. Testing the hypotheses, the results show that sanctions (pre-and post-JCPOA) moderated the relationship between the exchange rate fluctuations and corporate performance indicators. This research provides valuable insight into the sanction conditions and companies' reactions. It leads companies towards self-sufficiency and cooperation with knowledge-based firms for development and growth and reduces dependence on foreign resources and goods.

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*Corresponding Author:
Mohammad Reza Abbaszade
Email: abbas33@um.ac.ir
Tel: 09155114117
ORCID: 0203 – 8650 – 0002

1. Introduction

Countries use sanctions to persuade a government to change their policy. Sanction imposers force the targeted government to react in their favor. Economic sanctions are the most practical international bans, limiting the government in its international trading relationships. The objective of the sanctioning country is to impose high costs on the target country to coerce a policy change or attain a specific action from the target government, which will harm their resource allocation. Economic sanctions can vary from trade and trader barriers, limiting foreign investments, restrictions on financial transactions, stopping financial aid and avoiding technology updates.

America has always targeted Iran for sanctions, which greatly lowered Iran's economic ability. Imposed bans from 2012 to 2015, when Iran was under worldwide pressure, decreased oil exports enormously and prevented the government from repatriating approximately 120 billion dollars from foreign assets. According to the Joint Comprehensive Plan of Action (JCPOA), it was agreed to lift nuclear-related sanctions; however, primary US sanctions on Iran remained in place. These sanctions prohibit most commercial activities between the US and Iran. They banned Iran's advanced missile activities and Sepah Pasdaran. Iran's exports have increased by 7% from 2016 to 2017. However, on May 8th 2018, America withdrew from Iran's nuclear deal. Sanctions were reinstated in November 2018 (a 90-day plan) and expanded (a 180-day plan). The US Department of Treasury admitted Iran's sanction as one of the most restricted sanctions America has ever imposed on a country, significantly affecting the energy, shipping and financial sectors.

Iran has always been targeted for sanctions, especially after the 1979 revolution. The United States imposed the first sanctions when Dr Mosadegh was the prime minister. When oil nationalization was implemented, America and England, to control the plan, restricted Iran's only national income from exporting oil. Since the 1979 revolution, the United States has led international efforts to use sanctions to influence Iran's policy. Therefore, stronger economic sanctions were enforced by the United Nations Security Council in 2006 and the European Union in 2007.

However, America believed the imposed sanctions needed to be toughened; therefore,

First, they prohibited European countries from dealing with Iran by suggesting that it would be America or Iran with which they could trade.

Second, in 2002, attracting international and the United Nation's attention, they accused Iran of having a ballistic missile program.

Since America, England, France and Germany tried to stop Iran's nuclear program, the Atomic Energy Agency asked The United Nations Security Council to demand Iran suspend enrichment activities by issuing Resolution 1696, giving a 30-day deadline. Iran continued its program regardless of the mentioned resolution, which forced even European countries, who believed in encouraging politics rather than harsh sanctions (Ghasemi, 2014), to extend sanctions against Iran following the US. They imposed more economic embargoes against Iran in 2010, issuing the Resolution 1929. In 2012, they expanded the sanctions on the energy section and bank transactions.

Although Iran has always been boycotted since the 1979 revolution, it has never been under international pressure like it has been by the US and EU since 2010 (Khalatbari, 2018).

America used to impose embargoes on Iran for oil export, shipping lines, cargo, insurance, and financial sections. However, with the support of the EU and the United Nations, he prevented the circumvention of bans by imposing even tougher sanctions on small and medium enterprises, greatly affecting Iran's economy (Khalatbari, 2018).

The restrictive measures cause a decline in foreign exchange resources and a sharp increase in exchange rates, inflation and financial sanctions, which yield obvious results (Lopez, 2015). It decelerates economic development and commercial and financial relations between the sanctioning country and the targeted government (Hufbauer et al., 2009). Considering the above, this paper aims

to investigate the impacts of macroeconomic variables, i.e., real exchange rates (EXit), producer price index (PPIit), import of raw materials (IMit) and foreign direct investment (FDIit) on performance index, i.e., cash flow from operational activities (CFOit), cash flow from investment activities (CIFit), profitability (Iit)and firm added value (AVit) in listed companies on The The Tehran Stock Exchange in Pre- JCPOA (2010 to 2014), Joint Comprehensive Plan of Action- JCPOA (2015 to 2017) and Post- JCPOA (2018 to 2020) in selected industries (chemical, automobile manufacturing, pharmaceutical and steel). Four regression models are selected, tested, and analyzed considering four independent variables and hypotheses.

2. Literature

Many studies have examined the impact of macroeconomic variables on firm performance indexes. Notably, we distinguish each macroeconomic variable, its effects on firm performance and sanctions' impact on the relationship between macroeconomic variables and firm performance (Boyd et al., 2005; Ozmen et al., 2012; Bhattacharjee and Han, 2014; Barakat et al., 2016; Issah and Antwi, 2017; Doruk, 2023).

Oil is one of the most political commodities in Iran's economy due to its injection of revenue. Thus, it is used as a vulnerable lever to put pressure on the Iranian economy. Export sanctions, Central Bank sanctions and currency fluctuations profoundly affect production (Nademi and Hasanvand, 2018). Sanctions on energy sources not only have severe consequences on exports, but they also affect petrochemical exports. Iran used to enjoy a strategic location, which resulted in outstanding development in petrochemical exports. However, imposed sanctions limited petrochemical exports (Amini and Zare, 2017). From 2012 to 2013, the restrictions on financial transactions led to a severe decline in the import of auto parts, approximately halved compared with previous years. The automobile industry's dependency on the import of auto parts shows its vulnerability to the sanctions. The sanctions influence the banking system since international banks refuse to cooperate with Iranian banks. Unclear economic status puts firms at higher risks in terms of investment.

This paper considers four dependent variables: added value, investment, profitability and operational activities.

Economic sanctions adversely affect society's welfare by reducing the added value of beneficiaries (shareholders, clients, governments, lenders and other beneficiaries).

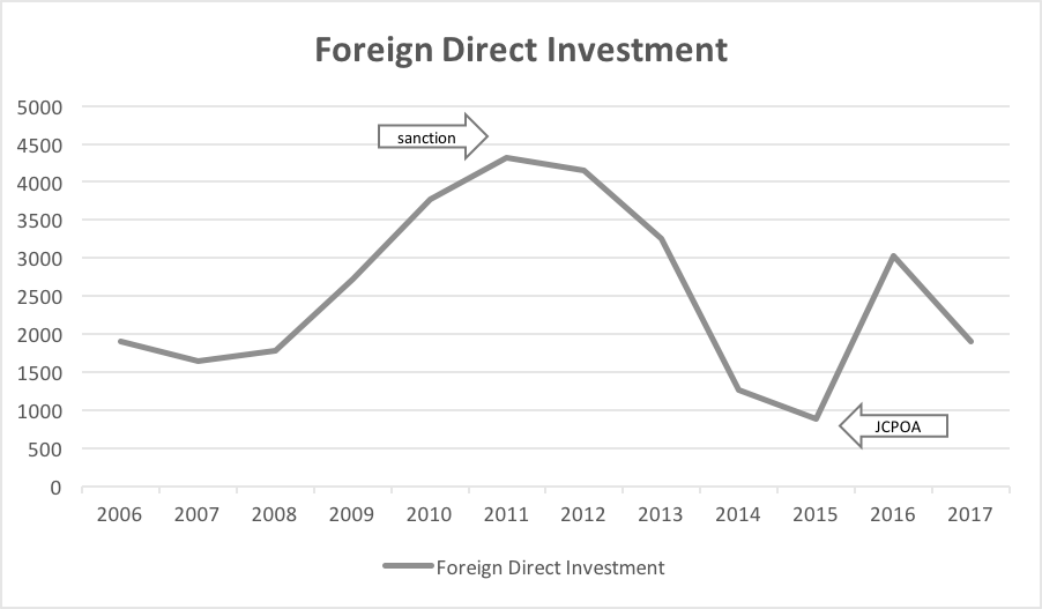
Sanctions have been used to advance a range of foreign policy goals. One of which is to isolate the target country from interacting internationally, mainly in three sections:

1. Technology
2. Trading
3. Banks and financial institutions

Therefore, sanctions disrupted transactions and reduced cash flows (Fakhari et al. 2012).

The Central Bank of Iran (CBI) lost control over exchange rate fluctuations, which enormously inflated the exchange rate. Sanctions postponed the cash flow from exporting oil from 1 to 5 months in 2005; therefore, the CBI could not maintain the market's equilibrium. Undeveloped countries depend on industrialized countries to import raw materials, technology and machinery. If exchange rates rise due to sanctions, reduced exchange resources, and economic changes, firms will be forced to pay larger amounts to source their needs. Observing companies from 2014 to 2020 indicated that although it results in income enlargement, it increases the expenses accordingly, resulting in an excess of expenses over income and, consequently, a decline in added value. Therefore, the exchange rate directly relates to added value (Izadi and Izadi, 2007).

Iran's average foreign direct investment (FDI) was 4 billion dollars in 2004, and more than 50% belonged to the petroleum, automobile manufacturing, pharmaceutical, and steel sectors.

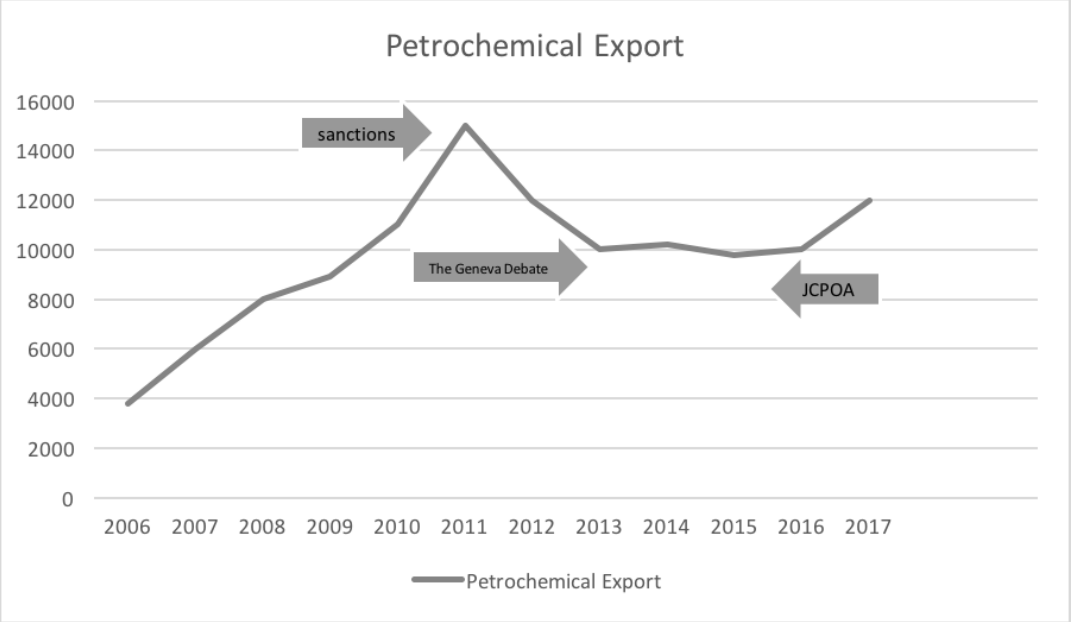


Source: Central Bank of Iran

Figure 1. Foreign Direct Investment

Foreign investors focus more on petroleum, automobile manufacturing, copper extraction, and the food and pharmaceutical industries. Iran attracted 34.6 billion dollars in foreign direct investment from 1992 to 2009 and has completed over 485 projects.

Sanctions not only deduct the raw materials, intermediate goods and capital goods' imports but also add import expenses and the cost of goods sold. The ascending exchange rate trend directly modifies production expense and negatively relates to profitability. Consequently, their production capacity will be lower, and their competition in international markets will be questioned. For instance, the petrochemical and automobile manufacturing industries seriously suffered from sanctions. The production of petrochemical products is significantly inclined due to the ban on selling raw materials, the purchase of final products and updating maintenance technology from 2006 to 2017 (the Parliament Research Center, 2017).



Source: Central Bank of Iran

Figure 2. Petrochemical Export from 2006 to 2017

Automobile spare part imports rose to 3.2 billion dollars in 2014, but sanctions played an important role in quality by importing from countries like China (Parliament Research Center, 2017).

The import of raw materials, intermediate goods and capital goods also decreased from 26.6% to 7.4% from 2012 to 2015.

Sanctions affect the currency market, causing an obstacle to access to the target country's financial sources, reducing international trading and direct investment, deducting export revenue, and increasing import volume. Limiting foreign trading and industrial activities leads to unemployment. Forcedly, goods are bought at higher rates; thus, inflation rises.

Arratibel et al. (2011) claimed that a decline in currency fluctuation results in economic development. Ozmen et al. (2012) believed that the exchange rate negatively relates to firm performance. However, financial growth and gross domestic product directly impact performance. Vătavu (2014) stated that the interaction of inflation and the crisis has a negative effect on company performance in the Romanian economy. Chikeziem and Ikenna (2016) believe no significant relationship has been concluded between Nigeria's currency rates and economic development. Barguellil et al. (2018) claimed that currency fluctuations negatively affect economic growth. Wesseh and Lin (2018) stated that a reduction in currency rate results in an increase in gross domestic product; however, a rise in currency rate has no significant effect on production. Korotin et al. (2019) imposed sanctions from 2014 to 2015, and Ruble rates are unrelated. Ahn and Ludema (2020) compared sanctioned and non-embargoed firms. Their results showed that sanctioned firms faced huge losses and reductions in asset values. Huynh et al. (2022) found that imposed sanctions have no impact on the energy sector; however, they affect other sectors in Russia. He claimed that sanctions are related negatively to capital costs and research and development but positively affect political risks. Azhdari et al. (2016) found that a 100% increase in currency rate rises 13% of the added value of the industry sector. Tehranchian et al. (2017) claimed that exchange rate fluctuations positively and negatively affect production in lower than threshold areas and higher than threshold areas, respectively. Predicted and unforeseen impulses in currency rates are negatively correlated with production. In the service sectors, exchange rate fluctuations are negatively correlated with production in lower than

threshold areas, but in higher than threshold areas, they are positively related. However, currency fluctuations have a neutral effect on production in the agriculture sector. It is recommended that governments make more transparent decisions due to the power of predicted impulses of the exchange rates. Considering the above, the following is the first hypothesis:

H1: Sanctions (pre-and post-JCPOA) are moderated in the relationship between exchange rate fluctuations and the firm's added value.

Reduction in trading and foreign investment resulting from sanctions imposes severe economic constraints and forces countries to change their economic policies, which results in a fall in exchange rates. Moreover, a lack of international trust in the target country's banking system causes a reduction in foreign investments.

Fadhil and Almasafir (2015) believed that foreign direct investment and human resources greatly help economic growth. However, technology obtained from foreign direct investment is not sufficiently combined with human resources to lead to economic growth.

Mirkina (2018) expressed that the impact of sanctions on foreign investments varies over time depending on the cost of sanctions, the initially imposed sanctions and the decades. Expensive sanctions lead to a significant decrease in direct investment in the short term, although they have no long-term impact. In the 1990s, direct investment had negative effects in short term runs; however, it liquidates through time.

Le and Bach's (2022) study showed that sanctions' impact on direct investment varies when different embargoes are imposed. Foreign investment reduces significantly during and after the crisis period.

Nguyen et al. (2022) concluded that sanctions destructively affect foreign investment. Considering the above, the following is the second hypothesis:

H2: Sanctions (pre-and post-JCPOA) are moderated in the relationship between direct foreign investment and firm investment activities.

The rise in the producer price index is directly correlated with an increase in the producer cost, reducing firm profitability. Since profitability is considered a factor of economic growth, it is directly affected by the impact of sanctions on sales and purchase rates (Ahn and Ludema, 2020). Developing economies are more vulnerable to macroeconomic conditions (Doruk, 2023). Sanctioned countries are more exposed to export and import costs and less likely to find suppliers. One of the main effects of embargoes is the increase in the cost of investments. Companies are forced to hire more employees to increase production. Obviously, the prices of the goods are boosted, inflation is created, and export profits decline dramatically.

Karshenasan and Soleimani (2014) expressed that sanctions and profitability are negatively related.

Kimasi et al. (2015) believed sanctions imposed on the target country's banking system have negative effects on profitability (ROA and ROE rates). Banks' refusal to provide LC services indirectly affects ROA and ROE.

Ezzati et al. (2019) found that production reduction from sanctions decreased employment in Iran's industrial sector. Considering the above, the following is the third hypothesis:

H3: Sanctions (pre-and post-JCPOA) play a moderator role in the relationship between the production cost index and firm profitability.

Increasing acceleration of countries' reciprocal dependency, stable development, productive production and modern goods are believed to be the primary means of success (Glöser et al. 2015). Companies have no choice but to update their production lines to adapt to the market needs (Hsu et al., 2014). Therefore, the inquiry for imports increases, greatly affecting the dependent companies

that import (Ahn and Ludema, 2020).

Sanctions limit companies' access to potential imported goods, which causes disruption in product processing plans, supply chain management, and material and resource management, ultimately reducing cash flow (Cimprich et al., 2018).

Sucky and Zitzmam (2018) and Georgise et al. (2014) claimed that importing raw materials benefits firms in terms of efficiency, creativity, flexibility and productivity. Thus, its effect on cash flow from operational activity is undeniable. However, Foroutan (1996) reported that the impact of imports on profit-cost margin is negative and neglectable.

Garshasbi and Dindarlou (2015) stated a positive relationship exists between international sanctions and Iran's macroeconomic variables, such as business, investment, employment, and economic growth. A direct relationship between sanction severity and its effects on economic factors was found. Considering the above, the following is the fourth hypothesis:

H4: Sanctions (pre-and post-JCPOA) play a moderator role in the relationship between the import of intermediate and investing in raw materials and firm operational activities.

3. Research Design and Variables

All firms on the Tehran Stock Exchange meeting the following criteria are included in our sample. Table 1 shows the sample and our sorting strategy.

Table 1. Sample

	The number of listed companies until 2021	**680**
First sort	Lack of access to financial information	9
Second sort	Active transactions after 6 months	34
Third sort	Listed after 2002	121
Fourth sort	Non-chemical, pharmaceutical, automobile and steel listed companies	335
	Number of companies	181

To test hypothesis 4, dependant variables are employed as performance indicators (added-value, profitability, cash flows and investement).

The following regression model is used to test the first hypotheses:

Equation 1)

$$AV_{it} = \alpha\alpha_0 + \beta_1 EX_{it} + \beta_2 FDI_{it} + \beta_3 PPI_{it} + \beta_4 IM_{it} + \beta_5 JCPOA_{it} + \beta_6 EX_{it} * JCPOA + \beta_7 Size_{it} + \beta_8 CPI_{it} + \beta_9 GDPR_{it} + \beta_{10} SHIM_{it} + \beta_{11} LIQ_{it} + \beta_{12} SQ_{it} + \beta_{13} IQ_{it} + \beta_{14} B\ Hold_{it} + \beta_{15} ROA_{it} + \varepsilon_{it}$$

The following regression model is used to test the second hypothesis:

Equation 2)

$$CFI_{it} = \alpha\alpha_0 + \beta_1 EX_{it} + \beta_2 FDI_{it} + \beta_3 PPI_{it} + \beta_4 IM_{it} + \beta_5 JCPOA_{it} + \beta_6 FDI_{it} * JCPOA + \beta_7 Size_{it} + \beta_8 CPI_{it} + \beta_9 GDPR_{it} + \beta_{10} SHIM_{it} + \beta_{11} LIQ_{it} + \beta_{12} SQ_{it} + \beta_{13} IQ_{it} + \beta_{14} B\ Hold_{it} + \beta_{15} ROA_{it} + \varepsilon_{it}$$

The following regression model is used to test the third hypothesis:

Equation 3)

$$I_{it} = \alpha\alpha_0 + \beta_1 EX_{it} + \beta_2 FDI_{it} + \beta_3 PPI_{it} + \beta_4 IM_{it} + \beta_5 JCPOA_{it} + \beta_6 PPI_{it} * JCPOA + \beta_7 Size_{it} + \beta_8 CPI_{it} + \beta_9 GDPR_{it} + \beta_{10} SHIM_{it} + \beta_{11} LIQ_{it} + \beta_{12} SQ_{it} + \beta_{13} IQ_{it} + \beta_{14} B\ Hold_{it} + \beta_{15} ROA_{it} + \varepsilon_{it}$$

The following regression model is used to test the fourth hypothesis:

Equation 4)

$$CFO_{it} = \alpha\alpha_0 + \beta_1 EX_{it} + \beta_2 FDI_{it} + \beta_3 PPI_{it} + \beta_4 IM_{it} + \beta_5 JCPOA_{it} + \beta_6 IM_{it} * JCPOA + \beta_7 Size_{it} + \beta_8 CPI_{it} + \beta_9 GDPR_{it} + \beta_{10} SHIM_{it} + \beta_{11} LIQ_{it} + \beta_{12} SQ_{it} + \beta_{13} IQ_{it} + \beta_{14} B\ Hold_{it} + \beta_{15} ROA_{it} + \varepsilon_{it}$$

The above models are conducted and analyzed in four sectors on The Tehran Stock Exchange: petrochemical, automobile manufacturing, pharmaceutical and steel.

Table 2. Variables

Variable Type	Details	Measurement
Dependent	Added-value	Net method= profit of stopped performance+ investment return+ cost of goods purchased- operating income
Dependent	Investment	Net cash flows from investment activities
Dependent	Profitability	Net profit/loss
Dependent	Operating activities	Net cash flows from operating activities
Independent	Exchange rate fluctuations	Real exchange rate fluctuations
Independent	Foreign Direct Investment	Foreign direct investment
Independent	Cost of production index	Cost of production index
Independent	Intermediate goods import	Intermediate and capital goods import
Dummy	Sanctions	During pre-JCPOA and post-JCPOA, is one; otherwise zero
Control	Inflation rate	Consumers price index
Control	Firm size	Natural Logarithm of sale and asset average sum
Control	Gross production growth	The cost of goods produced
Control	Share growth index	Dividing the market price of shares by their price on a chosen date (origin date)
Control	Liquidity growth index	Summing up the positive and negative cash flows and calculating the monetary ratio
Control	Sale quality	Dividing the cash flow from sale by the total sale
Control	Profit quality	Dividing cash flows from operational activities by total assets
Adjusted	Government ownership and influence	If the biggest investor is the government, it is one; otherwise, it is zero.
Adjusted	Return on Assets	Dividing net profit by total assets
Adjusted	Return on Equity	Dividing net profit by equity

4. Findings

4.1 Descriptive statistics

A sample of 181 firms from 2010 to 2020 is chosen to test the hypothesis. The following are the results.

Table 3. Descriptive statistics

Variables	Average	Median	Maximum	Minimum	Standard Deviation	Sample
Added-value	-0.159	-0.071	0.990	-0.989	0.419	1991
Investment	0.071	0.049	0.597	-0.0107	0.079	1991
Profitability	0.156	0.131	0.660	-0.362	0.160	1991
Operating activities	0.115	0.090	0.831	-0.399	0.149	1991
Exchange rate fluctuations	0.402	0.214	1.631	0.022	0.472	1991
Foreign Direct Investment	0.554	0.056	6.335	-0.720	1.863	1991
Cost of production index	0.278	0.3240	0.675	0.049	0.182	1991
Intermediate goods import	0.266	0.030	3.150	-0.223	0.919	1991
Sanctions	0.636	0.000	1.000	0.000	0.481	1991
Firm size	14.777	14.611	20.768	10.031	1.905	1991
Inflation rate	0.231	0.220	0.410	0.090	0.114	1991
Gross production growth	1.845	3.000	7.400	-6.800	4.024	1991
Share growth index	0.643	0.468	1.870	-0.208	0.632	1991
Liquidity growth index	0.278	0.251	0.406	0.201	0.066	1991
Sale quality	0.135	0.107	0.967	-0.769	0.201	1991
Profit quality	0.203	0.160	1.392	-0.695	0.273	1991
Government ownership and influence	0.157	0.078	0.991	0.000	0.208	1991
Return on Assets	0.134	0.113	0.764	-0.600	0.177	1991

4.2 Normal distribution test

One of the criteria that needs to be examined to test the hypothesis is the normal distribution test for dependent variables.

Table 4. Normal Distribution Test

Variable	Jarque-Bera Test	Value
Added-value	5.652	0.069
Investment activities	4.420	0.072
Profitability	5.420	0.069
Operational activities	4.964	0.714

According to Table 4, the distribution for dependent variables is normal.

4.3 First hypothesis result

Add value is used as the dependent variable to test the first hypothesis. The independent variable is exchange rate fluctuations, and the dummy variable is sanction.

Table 5. First Hypothesis Result (Added-value)

Variables	Sample		Automobile Manufacturing		Petrochemical		Pharmaceutical		Steel	
	Coefficient	**Value**	**Coefficient**	**Value**	**Coefficient**	**Value**	**Coefficient**	**Value**	**Coefficient**	**Value**
Exchange rate fluctuation	0.019	0.028	0.075	0.001	0.001	0.014	0.001	0.001	-0.001	0.204
Foreign Direct Investment	-0.021	0.000	0.015	0.001	-0.001	0.001	-0.001	0.436	-0.001	0.004
Cost of production index	-0.260	0.000	-0.292	0.001	-0.013	0.001	-0.001	0.004	-0.001	0.268

Intermediate goods import	0.034	0.000	0.032	0.001	0.001	0.007	-0.001	0.393	0.001	0.011
Exchange rate fluctuation*sanction	-0.442	0.000	-0.452	0.001	-0.014	0.001	-0.001	0.038	-0.002	0.050
Firm size	0.053	0.000	0.001	0.058	0.003	0.003	-0.001	0.937	0.001	0.067
Inflation rate	-0.788	0.000	1.573	0.001	-0.019	0.038	0.001	0.242	-0.006	0.027
Gross production growth	-0.010	0.001	0.015	0.001	-0.001	0.016	0.001	0.019	-0.001	0.004
Share growth index	0.047	0.001	-0.168	0.001	0.001	0.877	-0.001	0.679	0.001	0.179
Liquidity growth index	0.551	0.000	0.427	0.001	0.025	0.001	0.001	0.019	0.003	0.001
Sale quality	0.117	0.001	-0.001	0.721	0.004	0.040	0.001	0.007	0.002	0.007
Profit quality	0.037	0.006	0.001	0.253	-0.001	0.474	0.001	0.366	-0.001	0.082
Government ownership and influence	-0.033	0.040	-0.001	0.004	-0.001	0.738	-0.001	0.329	0.001	0.170
Return on Assets	0.387	0.000	0.001	0.056	0.010	0.001	0.001	0.001	0.004	0.001
Width Origin	-0.931	0.000	-0.492	0.000	0.234	0.003	0.319	0.005	0.291	0.001
AR (1)	-	-	0.293	0.000	0.234	0.003	0.319	0.005	0.291	0.001
Adjusted coefficient	0.915		0.988		0.983		0.841		0.764	
Durbin-Watson	1.526		1.825		1.677		2.039		1.930	
F Value	0.000		0.000		0.000		0.000		0.000	
	Probability	Result	Probability	Result	Probability	Result	Probability	Result	Probability	Result
Variance heterogeneity	0.000	dissimilar	0.000	dissimilar	0.000	dissimilar	0.000	dissimilar	0.000	dissimilar
Autocorrelation	0.000	confirmed	0.000	confirmed	0.000	confirmed	0.000	confirmed	0.000	confirmed
Limer	0.000	panel	0.000	panel	0.000	panel	0.000	panel	0.000	panel
Hausman	0.000	constant	0.048	constant	0.000	constant	0.012	constant	0.017	constant

The probability value of the overall coefficient statistic (F statistic) is smaller than 5% in all cases, which indicates that the regression has the necessary statistical validity.

4.4 Second hypothesis result

Investment activities are used as the dependent variable to test the second hypothesis. The independent variable is foreign direct investment and the dummy variable is sanction.

Table 6. Second Hypothesis Result (Investment activities)

Variables	Sample		Automobile Manufacturing		Petrochemical		Pharmaceutical		Steel	
	Coefficient	**Value**	**Coefficient**	**Value**	**Coefficient**	**Value**	**Coefficient**	**Value**	**Coefficient**	**Value**
Exchange rate fluctuation	-0.120	0.001	0.001	0.001	-0.001	0.076	-0.001	0.009	-0.001	0.000
Foreign	-0.007	0.00	-0.001	0.80	-0.001	0.06	-0.001	0.00	-0.001	0.00

Direct Investment		0		0		5		0		0
Cost of production index	0.029	0.019	-0.001	0.002	0.003	0.144	0.001	0.009	0.003	0.001
Intermediate goods import	-0.002	0.000	0.001	0.002	-0.001	0.003	-0.001	0.912	-0.001	0.031
Exchange rate fluctuation*sanction	-0.009	0.000	-0.001	0.513	-0.001	0.016	-0.001	0.000	-0.001	0.000
Firm size	-0.008	0.001	-0.001	0.094	-0.001	0.293	0.001	0.499	-0.001	0.001
Inflation rate	0.038	0.002	0.001	0.001	0.004	0.269	-0.001	0.533	-0.003	0.000
Gross production growth	0.001	0.003	0.001	0.002	0.001	0.228	-0.001	0.798	-0.001	0.000
Share growth index	-0.006	0.001	-0.001	0.000	-0.001	0.046	-0.001	0.139	0.001	0.001
Liquidity growth index	-0.050	0.004	0.002	0.000	-0.008	0.040	-0.001	0.013	-0.005	0.000
Sale quality	-0.014	0.016	0.001	0.975	-0.003	0.001	0.001	0.878	0.001	0.506
Profit quality	0.061	0.000	0.001	0.001	0.007	0.000	0.001	0.001	0.000	0.247
Government ownership and influence	-0.009	0.016	-0.001	0.013	-0.001	0.201	-0.001	0.103	0.001	0.162
Return on Assets	0.001	0.916	-0.001	0.091	0.001	0.065	0.001	0.502	0.001	0.588
Width Origin	0.196	0.000	0.009	0.000	0.034	0.000	0.017	0.000	0.018	0.000
AR (1)	0.222	0.001	0.482	0.001	-	-	-	-	0.206	0.012
Adjusted coefficient	0.744		0.792		0.742		0.899		0.793	
Durbin-Watson	2.077		2.142		1.524		1.694		2.087	
F Value	0.000		0.000		0.000		0.000		0.000	
	Probability	Result	Probability	Result	Probability	Result	Probability	Result	Probability	Result
Variance heterogeneity	0.000	dissimilar	0.000	dissimilar	0.000	dissimilar	0.000	dissimilar	0.000	dissimilar
Autocorrelation	0.000	confirmed	0.000	confirmed	0.000	confirmed	0.000	confirmed	0.000	confirmed
Limer	0.000	panel	0.000	panel	0.000	panel	0.000	panel	0.000	panel
Hausman	1.000	random	0.000	constant	0.000	constant	0.001	constant	0.123	random

The probability value of the overall coefficient statistic (F statistic) is smaller than 5% in all cases, which indicates that the regression has the necessary statistical validity.

4.5 Third hypothesis result

To test the third hypothesis, profitability is used as the dependent variable. The independent variable is the cost of production index, and the dummy variable is sanction.

Table 7. Third Hypothesis Result (Profitability)

Variables	Sample		Automobile Manufacturing		Petrochemical		Pharmaceutical		Steel	
	Coefficient	**Value**	**Coefficient**	**Value**	**Coefficient**	**Value**	**Coefficient**	**Value**	**Coefficient**	**Value**
Exchange rate fluctuation	0.023	0.060	-0.001	0.003	0.006	0.001	0.001	0.001	-0.006	0.000
Foreign Direct Investment	0.003	0.001	0.001	0.001	0.001	0.001	0.001	0.010	0.001	0.000
Cost of production index	-0.063	0.154	0.003	0.005	0.024	0.024	-0.001	0.006	0.024	0.000
Intermediate goods import	0.001	0.877	-0.001	0.345	-0.001	0.751	-0.001	0.131	-0.001	0.959
Exchange rate fluctuation*sanction	-0.216	0.020	0.001	0.541	-0.010	0.031	-0.002	0.000	-0.034	0.000
Firm size	0.003	0.137	-0.001	0.059	0.001	0.395	-0.001	0.070	0.001	0.348
Inflation rate	0.023	0.707	-0.003	0.049	0.008	0.435	0.002	0.001	-0.036	0.000
Gross production growth	-0.001	0.236	-0.001	0.012	-0.001	0.010	0.001	0.000	-0.001	0.000
Share growth index	0.005	0.624	0.001	0.201	-0.001	0.564	-0.001	0.264	0.001	0.079
Liquidity growth index	0.225	0.011	-0.004	0.062	0.050	0.006	0.002	0.001	-0.038	0.000
Sale quality	-0.009	0.335	-0.001	0.385	-0.009	0.005	-0.001	0.880	0.001	0.129
Profit quality	0.069	0.001	0.001	0.053	0.010	0.001	0.001	0.040	0.001	0.446
Government ownership and influence	0.005	0.600	-0.001	0.526	0.002	0.142	-0.001	0.568	0.001	0.719
Return on Assets	0.788	0.000	0.007	0.001	0.104	0.000	0.001	0.002	0.023	0.000
Width Origin	-0.076	0.011	0.016	0.000	0.017	0.625	0.040	0.000	0.056	0.000
AR (1)	-	-	0.358	0.001	0.408	0.001	0.529	0.001	0.590	0.001
Adjusted coefficient	0.791		0.679		0.888		0.948		0.841	
Durbin-Watson	1.572		1.959*		1.919		1.849		1.773	
F Value	0.000		0.000		0.000		0.000		0.000	
	Probability	Result	Probability	Result	Probability	Result	Probability	Result	Probability	Result
Variance heterogeneity	0.000	dissimilar	0.000	dissimilar	0.000	dissimilar	0.000	dissimilar	0.000	dissimilar
Autocorrelation	0.000	confirmed	0.000	confirmed	0.000	confirmed	0.000	confirmed	0.000	confirmed
Limer	0.000	panel	0.000	panel	0.000	panel	0.000	panel	0.000	panel
Hausman	0.212	random	0.000	constant	0.000	constant	0.001	constant	0.471	random

The probability value of the overall coefficient statistic (F statistic) is smaller than 5% in all cases,

which indicates that the regression has the necessary statistical validity.

4.6 Forth hypothesis result

Operational activities are used as the dependent variable to test the fourth hypothesis. The independent variable is intermediate, capital goods import and the dummy variable is sanction.

Table 8. Fourth Hypothesis Result (Operational activities)

Variables	Sample		Automobile Manufacturing		Petrochemical		Pharmaceutical		Steel	
	Coefficient	Value	Coefficient	Value	Coefficient	Value	Coefficient	Value	Coefficient	Value
Exchange rate fluctuation	0.010	0.004	-0.001	0.076	0.009	0.016	0.021	0.001	-0.002	0.622
Foreign Direct Investment	0.004	0.001	-0.001	0.042	0.002	0.056	0.005	0.014	0.001	0.336
Cost of production index	-0.019	0.058	0.005	0.180	-0.044	0.001	-0.061	0.009	0.041	0.021
Intermediate goods import	0.002	0.001	0.001	0.001	-0.001	0.152	0.005	0.001	0.002	0.007
Exchange rate fluctuation*sanction	-0.108	0.003	-0.015	0.106	-0.062	0.038	-0.090	0.071	0.070	0.124
Firm size	-0.003	0.010	-0.001	0.825	0.001	0.193	-0.005	0.001	-0.003	0.070
Inflation rate	0.056	0.005	-0.013	0.035	0.074	0.004	0.126	0.003	-0.101	0.007
Gross production growth	0.001	0.002	-0.001	0.021	0.001	0.017	0.002	0.002	-0.001	0.307
Share growth index	-0.002	0.135	0.001	0.014	-0.004	0.011	-0.009	0.021	0.007	0.003
Liquidity growth index	0.031	0.107	-0.006	0.332	0.056	0.009	0.034	0.387	0.047	0.137
Sale quality	0.041	0.000	0.019	0.001	-0.026	0.001	0.055	0.002	0.002	0.828
Profit quality	0.485	0.000	0.001	0.773	0.100	0.000	0.055	0.001	0.125	0.000
Government ownership and influence	0.001	0.899	0.001	0.327	0.004	0.031	-0.012	0.001	0.012	0.215
Return on Assets	0.026	0.000	-0.001	0.339	0.009	0.202	0.007	0.429	0.031	0.071
Width Origin	0.031	0.004	0.016	0.000	-0.011	0.222	0.052	0.003	0.039	0.018
Adjusted coefficient	0.987		0.437		0.813		1.177		0.233	
Durbin-Watson	2.373		2.054		1.795		1.744		1.585	
F Value	0.000		0.000		0.000		0.000		0.000	
	Probability	Result	Probability	Result	Probability	Result	Probability	Result	Probability	Result
Variance heterogeneity	0.000	dissimilar	0.000	dissimilar	0.000	dissimilar	0.000	dissimilar	0.000	dissimilar
Autocorrelation	0.000	confirmed	0.000	confirmed	0.000	confirmed	0.000	confirmed	0.000	confirmed
Limer	0.001	panel	0.000	panel	0.000	panel	0.000	panel	0.000	panel
Hausman	0.000	constant	0.000	constant	0.000	constant	0.01	constant	0.724	random

The probability value of the overall coefficient statistic (F statistic) is smaller than 5% in all cases, which indicates that the regression has the necessary statistical validity.

The summary of findings is indicated in Table 9:

Table 9. Findings summary

Hypotheses	Sections	Results
Sanctions (pre-and post-JCPOA) have a moderating role in the relationship between exchange rate fluctuations and added value.	All Sections	Confirmed
	Automobile Manufacturing	Confirmed
	Petrochemical	Confirmed
	Pharmaceutical	Confirmed
	Steel	Confirmed
Sanctions (pre-and post-JCPOA) have a moderating role in the relationship between foreign direct investment and investment activities.	All Sections	Confirmed
	Automobile Manufacturing	Rejected
	Petrochemical	Confirmed
	Pharmaceutical	Confirmed
	Steel	Confirmed
Sanctions (pre-and post-JCPOA) have a moderating role in the relationship between the cost of production index and profitability.	All Sections	Confirmed
	Automobile Manufacturing	Rejected
	Petrochemical	Confirmed
	Pharmaceutical	Confirmed
	Steel	Confirmed
Sanctions (pre-and post-JCPOA) have a moderating role in the relationship between intermediate and capital goods import and operational activities.	All Sections	Confirmed
	Automobile Manufacturing	Rejected
	Petrochemical	Confirmed
	Pharmaceutical	Rejected
	Steel	Rejected

5. Conclusion

This study aimed to examine the impact of macroeconomic factors during sanctions (pre- and post-JCPO) on firm performance indicators in selected industries in listed companies on the Tehran Stock Exchange. The sample of this study is collected over 11 years spanning from 2010 to 2020, including 181 firms listed on the Tehran Stock Exchange.

The results indicated that sanctions increase the exchange rate fluctuations; therefore, companies need to buy their required capital goods at a higher price. This increases the required capital and raises the cost of goods produced. Consequently, the national currency drops, the cost of production increases, and stagnation and industry bankruptcy are caused. Risks in investing internally and internationally in Iran increase significantly due to the fluctuations of exchange rates, and consequently, production insufficiency leads to the decline of firms' added value. Therefore, there is a negative relationship between sanctions and the relationship between exchange rate fluctuations and the firm's added value. The results of our study comply with the results from Arratibel et al. (2011), Ozmen et al. (2012), Vătavu (2014), Barguellil et al. (2018), Ahn and Ludema (2020), Huynh et al. (2022), Doruk (2023) and Tehranchian et al. (2017). However, the results are in contrast with the findings from Chikeziem and Ikenna (2016), Wesseh and Lin (2018) and Azhdari et al. (2016).

The impact of sanctions on different economic sectors such as trading, investment and employment, is undeniable. Sanctions avoid attracting foreign investors. Therefore, foreign investments in companies listed on the Tehran Stock Exchange declined due to the sanctions. Sanctions denigrate Iran's market as a high-risk investing option, which prevents foreign investors from injecting money into the market. Thus, sanctions (pre-and post-JCPOA) and the relationship between direct foreign investment and firm investment activities are negatively related in all sectors except automobile manufacturing. Our findings are in line with the results from Pegkas (2015), Fadhil and Almsafir (2015), Mirkina (2018), Le and Bach (2022), Nguyen et al. (2022), Ezzati et al. (2019) and Garshasbi and Dindarlou (2015).

Reducing the import of raw materials, intermediate and capital goods, and sanctions causes an increase in the cost of domestic products by multiplying the import costs. As the rate of exchange gets higher, the cost of product index and cost of production increase. As a result, the production capacity is reduced, so the products cannot compete in the international market. The above has negative effects on firm profitability. Our findings show that sanctions (pre-and post-JCPOA) and the relationship between the production cost index and firm profitability are indirectly related. The results are in line with Barry and Kleinberg (2015), Doruk (2023), Ezzati et al. (2019), Kimasi et al. (2015), Garshasbi and Dindarlou (2015), Karshenasan and Soleimani (2014). However, they contradict the results from Korotin et al. (2019).

With the increase of exchange rates and import costs, foreign investments and national currency values descend, reducing export prices and multiplying the import prices. Sanctions obligate companies to import their capital goods at a higher price, which requires larger amounts of capital. Weaker national currency and ascending production costs lead to stagnation and industry bankruptcies. Considering the above, internal and international investors' interests vanish; therefore, production and the cash flow from operational activities decrease. Thus, sanctions (pre-and post-JCPOA) and the relationship between the import of intermediate and investing in raw materials and firm operational activities are negatively related. The findings are consistent with Barguellil et al. (2018), Cimprich et al. (2018), Ezzati et al. (2019) and Garshasbi and Dindarlou (2015).

6. Practical implications

Investors, especially those who aim for the Iranian Stock Exchange, analysts, portfolio managers, market regulators and market observers can benefit from this study. Therefore, the following suggestions are offered:

Sanctions (pre-and post-JCPOA) modify the relationship between exchange rate fluctuations and the added value of firms. Accordingly, it is suggested that the banks and the Central Bank of Iran balance the exchange market to overcome stagnation because exchange rate fluctuations deduct the firm's added value.

Sanctions (pre-and post-JCPOA) modify the relationship between foreign direct investment and the investing activities of firms. The government is offered the opportunity to invest in self-sufficient manufacturing industries because they soften the sanctions' effects on listed companies on the Tehran Stock Exchange. This increases the export and investing activities.

Moreover, sanctions (pre-and post-JCPOA) modify the relationship between the cost of production index and profitability. It is suggested that knowledge-based companies substitute manufacturing the required goods for importing them in order to reduce their dependency on foreign goods.

Sanctions (pre-and post-JCPOA) modify the relationship between the import of the intermediate and capital goods and operational activities in the petrochemical sector. We suggest to the stock exchange organizations, relevant institutions and economic policymakers to improve the macroeconomic index, reduce economic risks, correct managerial and executive processes, secure the country's interests in concluding foreign contracts, formulate industrial development strategies and allocate foreign resources to productive sectors. When attracting funds, it is important to allocate foreign investments to the real economic sectors rather than the financial and nominal sectors.

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