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Corporate Social Responsibility Disclosure (CSRD) and Financial Distressed Risk (FDR): Does Institutional Ownership Matter?

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Abstract: This study aims to investigate the effect of corporate social responsibility disclosure (CSRD) on financial distressed risk (FDR) among firms listed on the Tehran Stock Exchange (TSE). This paper also examines whether there is a negative linkage between institutional ownership as a corporate governance mechanism and corporate bankruptcy. The final research purpose is to analyze if there is a moderating effect of institutional owners on the relationship between CSRD and FDR too. The study sample consists of 200 firms listed on the TSE between 2013 and 2018, and the statistical model is logistic regression. When FDR is assessed under both Article 141 of Iran's business law and the Altman Z-score model, our results on the main research hypotheses are quite similar. Considering the social and cultural conditions and economic situation of the Iranian market, the results show that firms with a high level of CSR disclosure are not able to make themselves more creditworthy and do not have better access to financing, resulting in more financial insolvency. Our findings confirm institutional shareholders play a vital role in facilitating a firm's emergence from bankruptcy. The results also demonstrate financial distress risk is less seen among companies with more institutional owners that disclose more CSR information. In other words, since the goals related to CSR are long-term and Iranian institutional investors have a long-term horizon towards the company, the presence of more institutional owners within a firm push managers to provide additional voluntary CSR disclosure so firms can maintain the trust of their shareholders at the highest possible level and prevent financial distress. Our additional analysis indicates there is a positive association between financial leverage and firm failure, whereas the current ratio and ROA are negatively connected with corporate bankruptcy. Finally, when FDR is assessed on the Altman Z-score model, our evidence supports a negative relation between purchase and sale-related party transactions and bankruptcy risk, which is consistent with the efficient transaction hypothesis.

Keywords: corporate social responsibility disclosure; financial distressed risk; institutional ownership; Tehran Stock Exchange



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1. Introduction

Corporate social responsibility (CSR) is gradually turning into a critical issue in the business world [1]. The idea of corporate social responsibility can be considered as an extremely valuable social asset [2]. In today's complex and competitive economic world, the role of corporate social responsibility in improving corporate financial situation, reputation, and attracting potential investors is becoming more important and can be a determining factor in reducing corporate financial crises [3–7]. So far, a lot of research has been done on the role of corporate social responsibility in company value [8–13], firm risk [14,15],

stockholders wealth [16,17], the stock price [18–20], cost of equity capital [21–23], credit ratings [24–26], and bankruptcy likelihood [27,28]. Investigating the disclosure level of CSR is still an ongoing concern in finance research owing to its great importance to investors, shareholders, and capital market analysts.

According to Resource-Based Theory (RBT), CSR can stable corporate financial performance by improving corporate reputation [29]. Even a company with a high probability of bankruptcy can have better financing if they try to participate more in CSR activities, for such companies are more reliable on banks and investors. Positive CSR actions are a lifeline for financially distressed firms, and these firms may spend a shorter time in bankruptcy when they engage in CSR activities [30,31]. Despite all the benefits of CSR disclosure, can it be a risk-reducing tool in the Iranian market? The answer to this question is a bit complicated because the conditions of the Iranian market are different from developed markets in different aspects. As for Iran's market, CSR disclosure has not been mandatory by regulatory bodies. Therefore, since the quality of mandatory information disclosure is well controlled by regulatory bodies, it is not to be expected that Iranian investors, shareholders, and analysts will pay much attention to voluntary disclosure of CSR information [32]. In a market where disclosure of CSR information is not required by law and regulations, managers may voluntarily provide more CSR information to pretend to others that they have taken steps to maximize the interests of shareholders [33]. In addition, the disclosure of such information is necessary to align the interests of directors and minority interests [34]. Besides, lifestyle and various social issues in Asian countries have made it difficult for people to pursue social responsibility measures. Unfortunately, it is often seen among developing countries that people are facing extreme challenges to cope with high inflation, economic problems, education, equal social justice, and so on [6,21].

Another important point about the Iran market is that it has faced severe economic sanctions in recent years, causing its companies to face many financial problems [6]. Iran's economic growth is negatively affected by unfavorable trends in macroeconomic variables such as unemployment rate, inflation, GDP, and other cases [35,36]. Economic sanctions against Iran have been so severe that inflation has peaked and the national currency is falling sharply. In such a heavy economic climate, on the one hand, the supply of raw materials required by Iranian manufacturing firms is extremely expensive, leading to an increase in the cost of products. On the other hand, due to the increase in the general level of prices, the purchasing power of people in society is declining, which will have a detrimental effect on the sales and profitability of companies. U.S. sanctions administered by the Treasury Department have sought to isolate Iran from the international financial system [37]. Accordingly, the foreign exchange earnings of many Iranian export companies have been blocked and they cannot transfer this money inside the country. In addition, given there is severe information asymmetry in the Iranian market, directors are predicted to have motivations for distorting accounting figures to show their financial performance better so they can attract more attention from investors and creditors [38]. Nor can we ignore the fact that evaluating the performance of managers based on profitability has doubled the motivation for managerial opportunistic behaviors [39]. In such dire economic conditions, Iranian firms with higher CSRD are expected to abuse the public's trust and manipulate accounting figures to mask their weak financial performance so that they can attract more investors and receive higher rewards [6]. Turning to the other side of the argument, it must be admitted that CSR is expensive because being socially responsible incurs extra expenses. Corporate social responsibility actions such as investments in pollution reduction, employee benefits packages, donations and sponsorships to the community, etc. can deteriorate profitability and lead to 'competitive disadvantage' [18,40]. Given the acute financial problems of companies during the economic embargo period, shareholders may expect managers not to engage in such costly activities that have long-term returns. CSR disclosure may cause dissatisfaction and anger among the company's major shareholders and they may decide to withdraw their capital because they feel that such costly activities in the current economic downturn will hurt the company's profitability. Hence, the main

motivation of this research is to know whether, in an inflationary economy where investors do not pay much attention to CSR voluntary disclosure and there is no strong corporate governance system to monitor its quality, the bankruptcy probability of firms with greater CSRD is high.

The most important point is that Iran's government has tried to take control of companies with the participation of institutional owners in the capital structure and be able to achieve its favorite goals through its financial and monetary policies [41,42]. The ownership structure of Iranian companies consists mainly of institutional investors such as banks, financial and investment firms, insurance companies, and other governmental corporations. Given that the philosophy of forming investment companies in Iran is to collect small savings and use them in large projects, and also due to the percentage of their shares, these companies are less inclined to speculate and make short-term trades. Government organizations and public institutions in Iran have long-term perspectives as well. Iran's government using institutional investors can penetrate well into the core body of corporate policies, and adopt appropriate economic strategies to take control of the market and prevent their financial collapse. According to the agency theory, institutional ownership as one of the most effective corporate governance mechanisms can reduce agency conflicts, for they effectively oversee the firm's actions to stop opportunistic managerial behavior and maximize shareholders' wealth [43–45]. The presence of institutional owners in the structure of companies not only creates more growth opportunities for them [46,47], but also decreases information asymmetry, which can ultimately prevent companies from going bankrupt in times of economic crisis [45,47–52]. As far as we know, the incentives for Iranian managers to do profit management are very high. First, banks and financial institutions are reluctant to take risks and lend to companies in financial trouble [38,53]. Second, management performance assessment is based on profitability [39]. For the above reasons, Iranian managers are expected to manipulate financial statements so they can show a favorable picture of their economic situation to gain the trust of creditors and attract the capital they need, as well as receive the highest rewards. The second purpose of this study is to investigate whether institutional owners with their regulatory actions can be an obstacle for opportunistic managers and save companies from insolvency risk. Finally, the presence of more institutional owners in a company inspires managers to help maintain shareholders' confidence in the company by providing additional disclosure of voluntary information [54]. Given that the goals related to corporate social responsibility are long-term type and Iranian institutional investors have a long-term horizon towards the company, we want to investigate if companies with more institutional owners who seek to expose social responsibility can save themselves from bankruptcy risk. In short, special features of the Iranian market such as the government's influence on corporate structure, non-mandatory disclosure of CSR information, financial pressures stemming from economic sanctions and corporate financing problems, and the cultural and social conditions of people's lives have created a new insight into the concept of corporate social responsibility, especially for scholars focusing on emerging markets. Developed market researchers can use the results of this study to understand why the importance of CSR information to the economic decisions of investors among emerging markets is different from their advanced markets too.

The rest of the aforementioned research is organized as follows. The next section frames the study into a theoretical framework, hypotheses development, and literature. Section 3 presents the research design and outlines where data is obtained and the sample selection procedure; Section 4 then explains the main results and implications drawn from statistical analyses. Finally, the last segment states the concluding remarks.

2. Literature Review and Hypotheses Development

Current literature supports the view that CSR can potentially act as a risk-easing mechanism during bankruptcy, enabling it to successfully get rid of bankruptcy. In times of financial crisis, managers today consider the adoption of CSR actions as one of the best

tools for risk management that can buffer the effects of cash flow volatility and costly lower-tail outcomes [55,56]. According to Godfrey [57], when a company is in the worst financial situation, that company can successfully overcome its financial problems if it has a good history of participating in social responsibility. In fact, by disclosing CSR information and taking steps in the interests of shareholders, companies aim to give more legitimacy to their activities and to be admired by society, so that they are less blamed by others in the financial crisis and can also get out of that crunch more easily [47]. However, sometimes economic, social, and cultural conditions, as well as the lack of strong control mechanisms, make investors and lenders distrust CSR information, and consequently, companies with more disclosure go on the path of more financial difficulties [6,21]. For this reason, the importance of the CSR concept among developed and emerging markets cannot be equated because the economic conditions of companies, cultural issues in the community, and the quality of regulatory mechanisms are quite different from one market to another. Most importantly, even in a particular market, whether developed or emerging, research results can still differ, indicating the characteristics of each period in a market may be different. So, there can be found no general consensus in the existing research literature on the impact of CSR disclosure on the bankruptcy risk. Hence, in the crisis-ridden market of Iran, we are looking for evidence on the relationship between CSR disclosure and bankruptcy likelihood. In other words, during the financial crisis caused by the economic sanctions against Iran, we want to know if companies with high CSR are likely to go bankrupt or survive.

CSR engagement can be used as one of the best risk management instruments for firms, for CSR disclosure can decrease the corporate bankruptcy probability [11,56,58]. Many studies have shown that corporate social responsibility (CSR) results in social capital that reduces a business risk [59–61]. Along these lines, Attig et al. [24] believe that social responsibility can significantly reduce their business risk in three different ways. First, CSR can strengthen the relationship between a company and its shareholders, which helps corporate stability and growth. According to stakeholder theory, companies are expected to be accountable for stakeholders that affect the financial achievements of a firm; further, they should also be accountable to people who are interested in the activities of the business units, even if they are not involved in doing so [32]. It is the right of all shareholders to be aware of all information related to a company's activity dealing with society [62]. Managers use CSR disclosure to show they are keen on taking steps in the interests of shareholders, subsequently, leading to aligning executive and minority interests [6,34]. Second, doing social responsibility allows companies to use internal resources more efficiently and better [24]. Drawing on legitimacy theory, CSR is a social contract between an organization and society in which organizations with higher CSR disclosure want to be admired by society because organizations can easily survive as long as their legitimacy is confirmed by society. In other words, legitimacy theory has forced the company to respond to the demands of different stakeholders by legitimizing their activities [6,32,63]. Third, firms with positive CSR have lower costs associated with socially irresponsible behavior [24]. Interestingly, companies that are more transparent in disclosing social responsibilities do not try to hide them as soon as bad news occurs in the market [64]. For this reason, even if negative events occur, stakeholders are less likely to blame and punish companies that have better disclosed social responsibilities, leading to reduced loss of income [31,65]. In addition to satisfying stakeholders' needs (i.e., stakeholder theory) that have the most impact on business units' success, the numerous reasons reveal why firms tend to voluntarily disclose information about their social responsibility [66,67]. Legitimacy theory argues that companies disclose their social responsibilities to legitimize their activities [68]. Another reason why companies are turning to sustainability reporting is to increase their reputation [69–74]. CSR disclosures play a significant role in reducing information asymmetry and improving transparency, resulting in having better access to financing [22,28]. Based on the political economy theory, the redistribution of organizations' wealth and power throughout society can be another solid reason for CSR disclosure by

firms [67]. Of course, Jeong and Kim [75] believed that CEO political orientation sometimes affects CSR considerably.

The fundamental question that arises from the literature is whether there are scientific reasons for social responsibility to prevent bankruptcy so that companies can use it as a tool to manage risk in times of financial crisis. Two main mechanisms can describe the reasons why firms use CSR disclosure as a tool for risk management. First, CSR disclosure can decrease financial distressed risk [14,15,28,56,76]. For example, Boubaker et al. [28] also indicated US firms with higher CSR levels have lower bankruptcy likelihood. Further, factors such as economic, political, and social developments such as exchange rate fluctuations, inflation, and so on create systematic risk in financial and economic systems, but Albuquerque et al. [15] stressed that CSR performance increases the firm's value and decreases systematic risk. Second, CSR disclosure is very important for creditors and lenders and makes companies better able to finance the resources they need [21,23,77]. For instance, using a sample of 11,055 firm-year observations from 35 countries, Wang et al. [21] inferred firms with better CSR scores have a lower cost of equity capital in North America, Europe, and Africa. Wu et al. [78] also indicated Taiwan firms with CSR scores have a lower cost of capital. Based on evidence from France, Hamrouni et al. [79] inferred environmental disclosure is negatively associated with the cost of debt. Further, Hajiha and Sarfaraz [77] as well as Moradi and Sohrabi [80] reached a similar conclusion in the Iranian market.

From Albuquerque et al.'s [15] point of view, it can be noted that in difficult financial times, for example when systemic risk is increased by economic sanctions against a country, social responsibility can be a good tool for its relative control. However, there is a key question: in an Asian country like Iran, which is in its worst economic situation even in recent years, can we expect investors and creditors to pay special attention to the concept of CSR? In fact, can Iranian companies with more social responsibilities disclosure have better access to financing and get rid of bad financial conditions, or is disclosing this information a wrong choice that will lead them to bankruptcy? Finding answers to these challenging questions is rooted in a variety of issues that need to be further discussed and analyzed. If we take a brief look at some of the research on social responsibility disclosure in Asia, we will see how investors and others perceive corporate social responsibility. Unlike many developed countries in the Americas and Europe, CSR is a new concept in the Asian continent, where different countries are still thinking and setting up their own appropriate social responsibility reporting systems [21,81]. The economic and cultural situation in Asia is such that the priority of the people is helping their families or other close group relationships, and in the second place, if they can, they help the public as much as they can [21]. In a very interesting study on China, Xu and Yang [82] wanted to evaluate public awareness of CSR. They examined 630 CEOs and commercial owners and figured out that more than half of them had no specific knowledge or awareness of CSR. There is a common belief among the general public that doing social responsibilities is the duty of government, which is why most Chinese private corporate executives are more interested in improving their reputation and wealth than the shareholders' interests [21]. In another very comprehensive study among 50 well-known companies in countries containing India, Indonesia, Malaysia, Philippines, Singapore, South Korea, and Thailand, Chambers et al. [81] found that although Asian countries have developed their own systems of CSR, the levels of CSR in Asia lag behind those in the West. Research in two countries in South Asia, Indonesia, and Bangladesh have also shown that the level of disclosure of social responsibility by companies is not very prominent [83,84]. Additionally, by examining the firms listed on the ASEAN Stars, it was found that the quality of corporate social responsibility reporting still has major weaknesses that need to be addressed [85]. Since Jordan and Palestine have a similar cultural context due to many Palestinians having immigrated to Jordan, Barakat et al. [86] conducted research entitled "Corporate social responsibility disclosure determinants of listed companies in Palestine (PXE) and Jordan (ASE)". Their findings showed levels of CSRD in both countries are low in comparison

with Western nations, although the level of CSRD in Jordan is remarkably higher than in Palestine. Even in terms of academia and science, Lin et al. [86] reviewed 14,490 articles about CSR and concluded the attention of scholars in developing countries is not as strong as in developed countries. Generally, these studies support the view that perceptions of CSR in Asian nations are very different from developed areas.

What is obvious in emerging economies is that the disclosure of corporate social responsibilities is voluntary and descriptive, while the disclosure of corporate social responsibilities in developed markets is controlled by legal entities and is more technical [6]. With a strong legal system and corporate governance, one can expect the quality of social responsibility disclosure to improve and investors to care about CSR, not in a system where disclosure of such information is voluntary [86,87]. Salehi et al. [6] also argue that CSR disclosure quality among developing countries like Iran is not as strong as developed countries like America because developing nations are facing extreme challenges with high inflation, economic problems, education, social justice, and much more. Similarly, Pündrich [88] points out that socio-economic and cultural factors affect corporate social performance in developing economies. Despite all the benefits of CSR, they are not sometimes a valid signal from the point of view of shareholders and investors of companies with financial problems. In times of economic crisis, shareholders and other stakeholders are sometimes opposed to participating in CSR-related activities, for CSR is an expensive action because of extra expenditures from being socially responsible [47]. Therefore, when firms disclose more CSR actions, major shareholders may be annoyed and they may decide to take out their capital because they feel that such costly actions in the current economic crunch will damage corporate financial performance. As mentioned earlier, Iran has faced the most severe economic sanctions in recent years, and this has caused Iranian companies to have many financial problems [6]. Given the unprecedented economic sanctions against Iran and the high financial pressures on Iranian companies, managers of these companies have a strong incentive to manipulate accounting figures to better show their financial situation and attract more investors. In fact, firms with higher CSR disclosure that have unfavorable financial conditions are likely to abuse the general public's trust and attempt to manipulate financial statements to mask their poor financial performance [6]. Muttakin et al. [89] states that in less developed markets, before engagement in earnings management, managers try to build trust by disclosing more their social responsibilities. In another study with similar thinking, Chakrabarty et al. [90] observed exchange-traded funds (ETF) that hold corporate social responsibility (CSR) stocks are not safe havens for investors during times of economy-wide slumps. Therefore, in an emerging Asian market called Iran, with a different understanding of CSR, which also has many financial problems, its investors and creditors are expected not to pay much attention to CSR information disclosure. Salehi et al. [6] realized that higher disclosure of CSR leads to lower profitability because organizations not only do not comply with effective rules in achieving environmental and social goals, but also CSRD is not the main concern of stakeholders in the Iranian capital market. According to the available documents related to cultural and social characteristics in the Asian region and most importantly the economic problems of the Iranian market, companies with higher CSR disclosure will have big difficulties in financing and are likely to go bankrupt, as few investors are interested in disclosing such information. Drawing on the above-mentioned research literature and Iranian market conditions, the research hypothesis predicts as follows:

Hypothesis 1 (H1). *There is a significant association between corporate social responsibility disclosure (CSRD) and financial distressed risk (FDR).*

In general, Corporate Governance Mechanisms (CGM) can be divided into two categories, external and internal, and the focus of this research is on institutional ownership, which has always been one of the most important external mechanisms. Institutional ownership refers to the ratio of shareholdings held by institutional investors in outstanding shares [91]. Institutional owners include large investors such as banks, investment compa-

nies, and other legal entities with major shares [42]. From a theoretical point of view, the status of institutional owners in a corporate governance system is very complicated [42]. On the one hand, according to the agency theory, institutional ownership can reduce agency conflicts, for they effectively monitor the company's actions to prevent opportunistic managers from harming shareholders' interests [43–45]. The monitoring roles of institutional shareholders are expected to strengthen firms through higher growth opportunities and reduce agency problems [47,55]. The literature suggests that the existence of institutional ownership in the capital structure of the firms limits the agency conflict-related issues and provides a better indication of the financial stability and viability of such firms in the given financial market circumstances [92]. Institutional owners can do actions to make a company's resources and assets more efficient and reduce financial problems to a minimum [38]. Institutional shareholders have many advantages in gaining and organizing information. They often analyze each investment rather than individual investors; thus, institutional investors can oversee firms and make decisions that are more directed and not detrimental to them [48,93]. As the level of institutional ownership increases, the provision of information by company managers to relevant people and groups in the market increases; in other words, information asymmetry decreases, which will lead to market efficiency in terms of information. In line with the above points, much research so far has proven institutional ownership affects negatively financial distress risk [45,47–52,94–98].

Institutional investors sometimes have a long-term vision and sometimes a short-term investment horizon. Institutional investors with a long-term investment perspective can contribute to the financial performance of companies in several ways [99]. First of all, they can reduce agency problems and information asymmetries due to their close relationship with the capital market and by doing oversight activities. Second, they moderate management's shortsightedness by allowing managers to invest in more lucrative long-term projects. Third, they contribute to the economic growth and development of companies by increasing the motivation and reward of managers and aligning their interests with shareholders. In this regard, various studies have found evidence consistent with the fact that the supervision of the company by institutional investors can force managers to place more emphasis on company performance and reduce opportunistic behavior [100–105]. Another important point is that large institutional investors have the opportunity, resources, expertise, and ability to oversee and influence managers [47,106]. However, whether or not they use their ability to influence company decisions largely depends on the number of stocks they own. If a large number of shares belong to institutional investors, these shares are less tradable and therefore held for longer periods [100]. Institutional investors with large stocks have a long-term perspective and are more likely to participate in oversight because they have a longer time to learn about companies as well as more opportunities to influence management [99]. By contrast, when institutional investors own a small number of shares in the company, they can easily cash their shares if the company's financial performance is poor, and therefore have little incentive for regulatory activities [100]. These investors have a short-term investment horizon because they tend to trade frequently based on the information and rely on short-term trading profits [99]. In the same vein, the results of Waheed and Malik [107] confirm that long investment horizon institutional investors play a positive role in improving corporate governance index and corporate financial performance, while short investment horizon institutional investors are detrimental for both corporate governance and performance. According to the efficient-monitoring hypothesis, institutional shareholders with a long-term vision, attach great importance to the long-term value of the company and mainly have the power to control the company [108–110]. However, proponents of the self-interest hypothesis firmly believe that institutional investors have access to all confidential information related to business objectives [111], harming the interests of the company's shareholders.

Given that the relationship between institutional ownership and corporate financial performance is positive in some studies [52,112,113], negative in others [114–116], and even meaningless in some [117,118], it can be concluded that the type of relationship

depends more on market economic conditions and the views of institutional investors. In Iran's market, institutional investors have a significant share in the ownership structure of Iranian companies. Robust evidence has also shown that approximately 66 percent of institutional owners in Iran's Stock Exchange are state-owned and quasi-governmental organizations [41,42]. Therefore, in the Iranian economy, the government has a significant influence on corporate investment strategies and decisions. As mentioned earlier, Iran has faced the worst of severe economic sanctions during recent years, causing many of its companies to struggle with unbelievable financial problems [38,53,119]. As lenders and investors cannot simply trust such firms with a high risk of collapse, these firms are likely to show a beautiful picture of their financial situation so that they can absorb better financial resources and attract more investors [38,53]. In addition, given the fact that management performance in the Iranian market is assessed largely based on corporate profitability, it is predictable that managers manipulate financial reports as much as possible to receive more rewards and maintain their job position [39,53]. In the Iranian market environment, because the quality of the internal control system is lower compared to developed countries, opportunistic managerial behavior and lack of favorable financial reporting are seen more [53,120]. In the same vein, Ravenstein [121] argues that when the internal control system quality is low, companies are generally encouraged to turn to opportunistic behavior. Given the points made about the Iranian market, it seems that institutional owners can have both a positive and a negative impact on the financial performance of companies. On the one hand, the positive linkage between institutional ownership and bankruptcy risk is justifiable. That is because during the period of economic sanctions against the Iranian market, when most companies have serious financial problems and are in financial strains, access to confidential information gives rise to information asymmetry between institutional owners and minor shareholders [39]. On the other hand, during the financial crisis of the Iranian economy, the negative relationship between institutional owners and financial distress is conceivable for several important reasons. As mentioned before, in such economic conditions, managers try to show the financial condition of companies better by manipulating accounting information to attract convenient financial resources in the capital market and receive the right reward. Now, if institutional investors have long-term goals, they are expected to reduce agency problems and information asymmetries, direct managers to long-term investment projects, and align management's interests with other shareholders by increasing rewards and motivation. As a result, by doing these, they finally can improve the financial situation of companies and save them from the risk of bankruptcy [96,97]. Therefore, the next hypothesis of this research is stated as follows.

Hypothesis 2 (H2). *There is a significant association between institutional ownership and financial distressed risk (FDR).*

Although market participants attach great importance to corporate social responsibility, financial performance is still their main concern [122]. According to risk aversion theory, institutional owners are rational investors who seek efficient investment by considering the risk and return of each investment. Thus, institutional investors may view corporate social actions as a tool to reduce potential risk. This is most likely to happen when gaining credit for social and environmental activities reduces stock price volatility [123]. In comparison with micro shareholders, institutional investors because of exercising substantial voting power as well as having asymmetric information advantages are very willing to participate in the crucial decisions of the organizations [43,124,125]. In addition, since institutional owners possess remarkable percentages of the firm's stock and cannot easily sell their shares, they care a lot about the company's long-term strategic decisions and goals compared to other shareholders [126]. According to good management theory [127], as the firm's long-term performance can be improved by good management practices such as CSR disclosure, institutional shareholders are expected to support CSR-related actions [126]. Institutional investors such as pension funds, insurance companies, banks, and securities firms offer credence services characterized by significant information asymmetry between

the institutional investor and its customers [126]. High levels of disclosure of information about corporate social activities can be one of the most effective ways to send this signal from institutional owners to their customers that they are trustworthy and adhere to ethical values towards society and thereby differentiating their services [128]. After all, extensive studies among 41 different countries have shown that institutional owners put a lot of pressure on companies to improve their social responsibility performance. Firstly, social norms have made institutional owners value environmental issues more, and secondly, institutional shareholders know that in times of financial and economic crisis, they can use such activities as a protective shield [129]. Accordingly, various studies have so far confirmed the desire of institutional owners to expose corporate social responsibilities [130–133].

The question now is whether all institutional investors are willing to have higher CSR ratings. Since institutional investors can have distinctive motivations and time horizons, different types of institutional owners will have their own distinct as well as potentially conflicting preferences for the firm's CSR disclosure [124,126,134]. For instance, as public pension funds have pensioners' longer time horizons and the sheer size of their holdings, they are often keen on long-term projects [126]. By contrast, since mutual funds, investment banks, security firms, and insurance firms have professional fund managers' high turnover rates [135] and compensation plans based on short-term earnings [136], they are likely to engage in relatively short-term orientations. Based on Oh et al.'s [126] argument, because the returns from CSR are predicted to be realized mostly in the long run, the long-term oriented institutional owners probably support CSR, whereas other short-term oriented institutional shareholders may be less supportive of CSR engagement. Given that the ownership structure of most Iranian companies consists of large institutional shareholders [41,42], the Iranian government has considerable influence on companies' policies and strategies. The important point is that Iranian firms are not independent of the influence and monitor of Iran's government. Because the strategies and decisions of Iranian companies through institutional ownership are under the influence of the government, they are expected to have a longer-term perspective during the economic crisis caused by sanctions, and by turning more to CSR disclosure; they can minimize the corporate financing problems. According to good management theory [127], since CSR is optional in Iran's climate, the provision of such information is a kind of good managerial practice and contributes to corporate economic progress [126]. Thus, institutional owners not only want other main shareholders to pay much attention to CSR, but also encourage stakeholders to put pressure on managers to disclose CSR information. Therefore, given that the goals related to corporate social responsibility are long-term and also Iranian institutional investors have a long-term horizon towards the company, it is expected that companies with more institutional owners who seek to expose more social responsibility will eventually be able to save themselves from the risk of bankruptcy during an economic crisis by reducing information asymmetry and gaining more lenders' trust. Hence, the latest hypothesis of this research is predicted as follows.

Hypothesis 3 (H3). *Companies with higher institutional owners that disclose more CSR information are less likely to go bankrupt.*

3. Research Methodology

Because the results can be used in the decision-making process, this study is applied research. The statistical model used in this study was logistic regression. To measure financial distress risk (FDR), this paper uses two accounting-based measures, namely, the Article 141 of Iran's business law as well as the Altman Z-score model. The total data needed to test the hypotheses were collected directly from the financial statements on the Tehran Stock Exchange's official website [137]. The study population consisted of 1200 observations and 200 firms listed on the Tehran Stock Exchange (TSE) during the years 2013–2018. In this study, since the logistic regression model is nonlinear, the classical assumptions related to OLS regression are not particularly important for it. However,

the Jarque-Bera test was used in this study to measure the normality of the distribution of observations of variables [138,139]. The variance inflation factor (VIF) index is used to measure the severity of multicollinearity [38,53,139]. The Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) also are employed to investigate if a time series variable is non-stationary and possesses a unit root [53]. In this research, we use McFadden's R2 to verify the suitability of logistic regression [138]. The Partial F-test is also used to recognize if variables are redundant as well. The techniques of 2SLS, GMM, and LIML were employed to address endogeneity concerns in this study. Finally, by using EViews software, to solve the possible problem of heteroskedasticity, the GLM method for the coefficient covariance was used. Coherent with the research literature, we selected the best independent variables on basis of their statistical significance by using a stepwise regression procedure. In addition, since the dependent variable of this study has different states, the logistic regression models are used.

3.1. Research Sample

The statistical sample of this research is all the manufacturing companies listed on TSE during the period 2013–2018. In this study, to determine the sample size, the systematic elimination method has been used based on the following criteria:

- The audited financial information of each of the companies under study must be available.
- The financial periods of companies should be finished at the end of the solar year (20 March).
- The companies should not have changed their fiscal year during the study period, and they should not have more than six months of trading halts.
- Building on the research time (2013–2018), the company should be listed on the Tehran Stock Exchange before the year 2013 and its name not removed from the listed companies by the end of 2018.
- The type of the business activity should be productive; hence, investment companies, leasing, credit, and financial institutions and banks are not included in our sample due to these companies having quite different natures in terms of reporting and ownership structure.

Taking account of the above conditions that have been used in many local studies [38,39,119,139], a sample size of 200 TSE manufacturing firms was selected. Table 1 provides information on how to distribute the studied companies in different industries.

Table 1. Firm-year observations distributed across the industry sectors.

| Industry Name | Code | Firm-Year Observation | % of the Sample |
|--|------|-----------------------|-----------------|
| Pharmacy | 1 | 126 | 10.5 |
| Automotive and the manufacture of Automotive Parts | 2 | 150 | 12.5 |
| Production of metal products | 3 | 36 | 3 |
| Rubber and plastic | 4 | 30 | 2.5 |
| Machinery and electrical devices | 5 | 48 | 4 |
| Textiles | 6 | 6 | 0.5 |
| Machinery and Equipment | 7 | 60 | 5 |
| Basic metals | 8 | 114 | 9.5 |
| Extraction of metal ores | 9 | 36 | 3 |
| Food & Beverage products except for sugar | 10 | 108 | 9 |
| Chemical products | 11 | 120 | 10 |
| Petroleum products and nuclear fuel | 12 | 36 | 3 |
| Other non-metallic mineral products | 13 | 54 | 4.5 |
| Extraction of other mines | 14 | 6 | 0.5 |
| Technical & Engineering Services | 15 | 12 | 1 |
| Computer-related services | 16 | 12 | 1 |
| Coal mining | 17 | 6 | 0.5 |
| Cement, lime, and plaster | 18 | 138 | 11.5 |
| Sugar | 19 | 42 | 3.5 |

Table 1. Cont.

| Industry Name | Code | Firm-Year Observation | % of the Sample |
|----------------------------------|------|-----------------------|-----------------|
| Wooden products | 20 | 6 | 0.5 |
| Paper products | 21 | 12 | 1 |
| Ceramic & Tile | 22 | 36 | 3 |
| Agriculture and related services | 23 | 6 | 0.5 |
| Total | | 1200 | 100 |
| Source: Own research | | | |

The Iranian companies considered are located in twenty-three different industries. Concerning the distribution of the sample in terms of the industry type, the lowest number is related to industries of textiles, wooden products, agriculture and related services, coal mining, and extraction of other mines, and the industry of automotive and parts manufacture had the highest number of observations.

3.2. Research Model and Variables

The primary purpose of this study is to investigate whether there is a significant relationship between corporate social responsibility disclosure (CSR) and financial distress risk (FDR). Further, given Iranian firms have faced financial difficulties during recent years due to severe economic sanctions, this research aims to investigate if institutional owners, as one of the most important corporate mechanisms in the Iran market, can save firms from bankruptcy risk. Finally, since the goals related to corporate social responsibility activities are mainly achieved in the long run and also considering that institutional owners in the Iranian market have a long-term investment horizon because they own a large number of shares, this paper tends to investigate if institutional ownership has a moderating role in the relationship between CSR and FDR. In other words, we want to know if firms with higher institutional owners that disclose CSR information are less likely to go bankrupt. In general, to find the answers to all the above questions, the research model has been developed as follows.

Financial distress risk (FDR) = $\beta_0 + \beta_1 \text{CSR} + \beta_2 \text{institutional owner} + \beta_3 \text{CSR} \times \text{institutional owner} + \beta_4 \text{GDP} + \beta_5 \text{inflation rate} + \beta_6 \text{ROA} + \beta_7 \text{current} + \beta_8 \text{leverage} + \beta_9 \text{size} + \beta_{10} \text{age} + \beta_{11} \text{RPT-purchase} + \beta_{12} \text{RPT-sale} + \beta_{13} \text{RPT-loan} + \beta_{14} \text{M\&A} + \beta_{15} \text{manager tenure} + \text{industry indicator} + \text{year indicator} + \varepsilon_{i,t}$

Where, FDR is defined as a dependent variable in our study. The literature shows that there are two approaches to predicting the likelihood of corporate bankruptcy; one based on accounting data [140–144], and the other based on a combination of market and accounting data [145–147]. Analysis of financial statements is used in accounting-based models to originate a score that displays the differences between distressed and non-distressed firms. Instead, market or structural models are established based on a combination of balance sheet items and volatility in the market values of firms' assets to evaluate distance to default (DD) [148]. A key differentiation in this study is that although many credit risk studies focus mainly on bankruptcy, this research using Article 141 of the Iran business law focuses on an early warning distress indicator that signals distress well before bankruptcy. Drawing on Article 141 of the Iran business regulation, if at least half of the company's capital is lost due to its losses, warning signals are sent to the firm that it may collapse at any moment; hence, the board of directors is obliged to immediately convene an extraordinary general meeting of shareholders to discuss the issue of liquidation or survival of the company. The evidence has confirmed that significant accounting-based models can be developed for Asian countries and emerging markets, but there are differences in models from country to country and period to period. In general, models developed for specific periods and nations implement somewhat better than one-size-fits-all models. A higher grade of correctness is obvious when there is less instability in the sample [148]. Accordingly, as the high predictive power of Article 141 of the Iran business rule in identifying financial distress in Iran's market has been completely

evident [149–152], this study employs this law that is more compatible with the structural conditions of the Iranian market and has very little volatility in its forecasts. According to the Iran Business Law, Article 141, if the accumulated losses of a firm are more than 50% of stockholder equity, the firm is considered as a distressed firm [149–152]. As for the method of corporate classification, two techniques of logistic regression and Multivariate Discriminant Analysis (MDA) have been usually used in most recent studies [153]. As the use of the logit model does not have assumptions of uniform covariance matrices and multivariate normality and MDA implicated non-linear effects [153], logistic regression is more effective and practical than MDA for analyzing distressed and healthy firms [141,154]. Accordingly, due to various statistical advantages, we first have used logistic regression to analyze our research objectives based on Article 141.

Besides, to ensure the trustworthiness of our outcomes, we conduct a battery of sensitivity checks. We also use another alternative FDR accounting-based measure called the Altman Z score model that is so popular among different scholars around the world. It should be noted that one of the first bankruptcy prediction models was designed by Altman in 1968. In later years, a great deal of criticism was leveled at his model. Many critics argued the Altman model could have been used by companies with a general business nature; thus, in 1983, Altman modified his model. He modified his model by substituting the book value of the stock for its market value and then changing the coefficients and the bankruptcy ranges [155,156]. This model has been used mainly on manufacturing companies, which also has a very high accuracy [155]. The results of analyzes conducted in the Iranian market indicate that the Altman Z-score model has a very high power to predict the bankruptcy of Iranian companies and its error percentage is very small [157]. For this reason, in addition to Article 141 of the Iran business law, we use the Altman Z-score model to identify healthy and distressed manufacturing firms in the Iran context. The variables in the Altman model are: X1 = working capital/total assets; X2 = retained earnings/total assets; X3 = earnings before interest and taxes/total assets; X4 = market value of equity/total liabilities; X5 = sales/total assets [155,156].

$$Z = 0.717 \times 1 + 0.847 \times 2 + 3.107 \times 3 + 0.42 \times 4 + 0.998 \times 5$$

Accordingly, when the calculated Z-score for companies in an emerging market is less than 1.21, the probability of corporate bankruptcy is very high (toxic zone). If it is between 1.21 and 2.9, the company is on the verge of bankruptcy (gray area). Finally, if the Z-score is greater than 2.9, the company has no particular financial problems and the probability of its bankruptcy is very low (green zone) [155,157]. In this study, since the dependent variable of this study has three different states; the multinomial logistic regression model is used. The dependent variable takes values 1, 2, and 3, where 3 is 'less likely to go bankrupt' and 1 is 'more likely to go bankrupt'.

CSR disclosure level is considered our independent variable. CSRD measurement is complicated for two reasons. Foremost, there is no consensus on the theoretical concept of CSR in the research literature [158]. Second, the concept is multidimensional with relatively heterogeneous dimensions [159]. Thanks to the absence of consensus and complexity of the concept, it is not surprising that many diverse methods have been employed in the literature to evaluate CSRD [40]. Following Salehi et al. [6], this paper uses the content analysis method to evaluate the CSR information disclosure level. Content analysis is a method of encoding text into different groups according to pre-defined criteria, which are widely used in research related to social and environmental disclosure because this method provides a systematic approach for researchers to analyze large unstructured data [6,32,160]. The coding method includes reading annual reports and determining any information related to environmental and social topics and their classification to appropriate sections and subsections. To measure the levels of environmental and social disclosure in this research, after a widespread review of the relevant literature, the final checklist was adopted from Muttakin and Khan [161], Maranjoori and Alikhani [162], and Salehi et al. [6]. After developing the checklist, coding rules were determined so that

each disclosure subsection was defined evidently and operationally. When the company discloses each of the indices above in financial reports and annual reports to the board of directors in the General Assembly, the dummy variable is 1, otherwise 0. The total score for each section is divided by the total relevant questions and thereby each company's social responsibility disclosure level is measured. In addition to the CSR disclosure level, the institutional owner is defined as another independent variable. Next, we added a moderator variable (CSR * institutional owner) to the research model to investigate the effect of Institutional Ownership on the connection between CSR and FDR variables.

As for control variables, the research literature has clearly shown that each of them is closely related to the likelihood of corporate bankruptcy risk. For example, because of the financial pressures caused by economic sanctions on the Iranian market, the effect of two macroeconomic variables, namely GDP and annual Inflation Rate on the risk of financial bankruptcy is examined to determine whether changes in these two variables affect the corporate financial situation [56]. To assess the relationship between corporate financial performance and bankruptcy risk, return on assets (ROA) is used in this study as another control variable. Another control variable is the current ratio. The current ratio is a measure of a company's ability to repay its short-term debts [53]. The closer the current ratio is to one, the better. However, if this ratio is much smaller than one, it indicates the company's inability to pay its debts too much, while if it is more than one, it conveys the message to shareholders that the company's management has failed to turn liquidity into corporate profitability [53]. So far, various studies have found conflicting results regarding the relationship between the current ratio and financial performance [53,163–166]. In addition, leverage is regarded as a control variable. The interest rate on debt is fixed and notwithstanding the firm's rate of return on assets. The financial leverage engaged by a corporate entity is targeted to earn more on the financial leverage fund than its expenses. Financial leverage and debt are moved in the same directions means its debt increases, then financial leverage also rises. The important goal of financial leverage is to improve the shareholder's return in fortunate economic environments. It is anticipated the debt is having a fixed rate of interest, which can be realized at a cost lower than the rate of return on net assets [53]. As long as a firm has more debt in comparison to equity and preference capital, the company is assumed to be more levered [53,167]. Different evidence has shown financial leverage not only has a positive impact on corporate performance [167,168], but it also affects firm value negatively [169–171].

We consider the firm size and firm age as the control variable as well. Larger companies can have better economic growth in the market than competitors due to having richer information resources. Besides, larger companies that have more assets have a higher market value than smaller ones [34,170,172]. In addition to firm size, the research literature has shown that firm age has sometimes had positive effects [173,174], and in some cases negative effects on financial performance [175]. Even though the negative relationship between firm age and financial performance can be justified from the perspective of liability of obsolescence in which organizational performance declines with age [174], the positive connection between them is explained based on the theory of learning by doing. In fact, in the case of increasing firm age, advancement in their productive efficiency over time by learning from their experience will be better [53]. Manager Tenure's variable can also affect firm value. Building on the Horizon issue, managers who are in the final year of their tenure are highly motivated to manage profits [176]. If management position is more stable, directors are less likely to pursue the interests of shareholders, and this increase in management tenure length can affect the supervisory actions of the board [53]. One of the effective tools to gain a competitive advantage in the market can be mergers and acquisitions (M&A) [177,178]. M&A can have great benefits for companies, including declining financing costs, tax advantages, obtaining easier access to a skilled labor force, seizing market power in a particular area; strengthen current products by uniting complementary product portfolios [179]. The value creation theory states M&A can increase labor productivity and financial performance, and the transfer theory highlights M&A

is a wealth transfer from workers to shareholders without changing productivity at the acquired company [53]. If the transfer theory is correct, M&A is expected to improve financial performance since it increases the shareholder share in the acquired firm [180]. Thus, M&A is implied in this research as another control variable to determine how it can save firms from bankruptcy risk. Moreover, research literature shows that Related Party Transactions (RPTs) can worsen the financial situation of companies and lead them to bankruptcy [181–183]. According to agency theory, sometimes the motivation for RPT activity is that the company's assets are taken out of the company's ownership in favor of affiliates and the managers participate in earnings management to cover it up [184]. However, the efficient transaction hypothesis indicates that related party transactions can meet the economic needs of a firm and prevent them from collapsing [53]. Therefore, given the financial crisis in the Iranian market in which managers have sufficient incentives to manage profits, by choosing RPT-purchase, RPT-sale, and RPT-loan as control variables, we are going to know whether different types of RPTs such as purchase, sale, and loan have a significant relationship with the probability of bankruptcy of Iranian companies. Eventually, after providing a complete explanation of the reasons for the selection of the research variables and the theoretical relationship between them and the subject of research, Table 2 summarizes how to calculate and define each of them.

Table 2. Definition of the variables.

| Variable | Type | Measurement |
|----------------------|-------------|--|
| FDR (Article 141) | Dependent | Financial distress risk is recognized based on Article 141 of the Iran Business Law. According to this law, when the accumulated losses of a firm are more than 50% of stockholder equity, that firm is considered as a distressed firm and takes one, or otherwise zero [149–152]. |
| FDR (Altman Z-score) | | Financial distress risk is assessed based on Altman Z-score model. According to the coefficients of this model as follows: $Z\text{-score} = 0.717 \times 1 + 0.847 \times 2 + 3.107 \times 3 + 0.42 \times 4 + 0.998 \times 5$ If Altman Z-score is less than 1.21, the firm is most likely to go bankrupt and takes 1. When Altman Z-score is between 1.21 and 2.9, the firm is on the verge of bankruptcy and takes 2. However, if Altman Z-score is greater than 2.9, the firm takes 3 as it is in good financial health and unlikely to go bankrupt [155–157]. |
| CSR | Independent | Following the checklist used by Muttakin and Khan [161], Maranjooori and Alikhani [162], and Salehi et al. [6], the content analysis method has been used in this paper to evaluate the CSR information disclosure level. |
| Institutional Owner | Independent | It represents the percentage of shares held by insurance institutions, financial and investment firms, banks, governmental corporations, and other parts of the state that calculated by dividing the institutional ownership stake by the total number of ordinary shares at the end of the period [52,53]. |
| GDP | Control | It shows gross domestic product in Iran's market annually [38]. |
| Inflation Rate | Control | It shows the annual inflation rate in Iran's market [38]. |
| ROA | Control | Earnings before interest and taxes (EBIT) are divided by the sum of a company's assets [38,185,186]. |
| Current Ratio | Control | The current assets are divided by current liabilities [39,53]. |
| Lev | Control | It is calculated through long-term debt scaled by total assets [39,53,187]. |
| Firm Size | Control | The natural logarithm of a company's total assets [53,187,188]. |
| Firm Age | Control | The number of years of company activity [38,53,189,190]. |
| RPT-Purchase | Control | It is calculated as the sum of disclosed purchase-related party transaction prices in notes to the annual financial statements divided by the beginning assets of the firms [53,189,191]. |
| RPT-Sale | Control | It is calculated as the sum of disclosed sale-related party transaction prices in notes to the annual financial statements divided by the beginning assets of the firms [53,189,191]. |
| RPT-Loan | Control | It is calculated as the sum of disclosed loan-related party transaction prices in notes to the annual financial statements divided by the beginning assets of the firms [53,189,191]. |
| Manager Tenure | Control | The number of years that a manager has been in charge of a company's management [53,176,192]. |
| M&A | Control | M&A is an indicator that takes 1 if a company has merged and integrated during the given period, or 0 otherwise [53,120]. |

4. Results

4.1. Descriptive Statistics

Descriptive statistics are used to describe the basic features of the data in this study. A general review of variables of this research includes the mean, standard deviation, maximum, and minimum has been described in Table 3.

Table 3. Descriptive statistics of quantitative variables.

| Variable | OBV | Mean | S. Deviation | Maximum | Minimum | Prob. Jarque-Bera |
|-------------------|------|----------|--------------|----------|-----------|-------------------|
| CSRD | 1200 | 0.259420 | 0.123897 | 0.666667 | 0.025641 | 0.177345 |
| Intuitional Owner | 1200 | 0.639473 | 0.321690 | 0.999960 | 0 | 0.088462 |
| GDP | 1200 | 431.3320 | 24.39797 | 460.2930 | 384.9510 | 0.056348 |
| Inflation Rate | 1200 | 18.69865 | 10.37105 | 34.70 | 9.10 | 0.112945 |
| ROA | 1200 | 0.136216 | 0.168378 | 0.705176 | −0.663758 | 0.075648 |
| Current Ratio | 1200 | 1.548566 | 1.092253 | 10.94708 | 0.287475 | 0.360231 |
| Leverage | 1200 | 0.604333 | 0.264338 | 3.938954 | 0.061063 | 0.069550 |
| Firm Size | 1200 | 6.523752 | 0.793670 | 8.587701 | 4.847388 | 0.780346 |
| Firm Age | 1200 | 40.13318 | 14.31364 | 67 | 8 | 0.251404 |
| RPT-Purchase | 1200 | 0.182980 | 0.391989 | 4.858388 | 0 | 0.095910 |
| RPT-Sale | 1200 | 0.168619 | 0.314972 | 2.139379 | −0.038853 | 0.059441 |
| RPT-Loan | 1200 | 0.010922 | 0.048883 | 0.793504 | 0 | 0.084645 |
| Manager Tenure | 1200 | 3.880361 | 3.010036 | 15 | 1 | 0.190947 |

Source: Data processed by the authors.

The Jarque-Bera test can be used to check the normality of the distribution of observations of a variable. According to this test, if the statistical probability is more than 5 percent, the (H0) hypothesis based on the normal distribution of observations of a variable will be accepted [138,139]. Since the probability of all variables in this study is greater than five percent, the normality assumption of the variables is supported. Regarding the descriptive statistics of quantitative variables, we can say the average CSRD level is equal to almost 25 percent, meaning the sample firms are reluctant to disclose their social responsibility, for they know that Iranian investors do not care much about this kind of information. In the same vein, Catalão-Lopes et al. [193] suggested firms probably refrain from CSR under adverse economic conditions in the short run. Because of severe economic sanctions against Iran, the average annual inflation rate has been more than 18.5 percent, which is a very high figure. The ROA ratio shows that 13% of the profitability of the sample firms is concerning the asset. Given the low average rate of return on assets, it can be seen that the financial performance of companies has been very poor during the economic crisis caused by sanctions. Approximately three-fifths of corporate assets are financed by debt, and the current ratio shows that firms are keen to settle their short-term debt immediately. Another important point is that fewer young companies are seen in this study because each of them is on average nearly four decades old. Institutional shareholding averages 0.639, ranging from the values of 0.000 and 0.999 of total equity ownership. Nearly two-thirds of corporate owners are of an institutional type, which shows that the government is very influential in the structure of Iranian companies and has somehow controlled the market. With further analysis of RPT, the results show that companies are more inclined to have purchase transaction compared to sale, although loans with only 1% are the least popular among companies. Descriptive statistics related to the qualitative variables of this research are presented in Table 4, too.

If we take a closer look at the details, it is quite clear that more than a quarter of the companies are at high risk of bankruptcy. We also find that approximately a third of Iranian companies preferred to participate in M&A actions during the recent economic crunch due to sanctions.

Table 4. Descriptive statistics of qualitative variables.

| Variable | Status | Description | Frequency | % |
|----------------------|--------|---|-----------|------|
| FDR (Article 141) | 1 | If the accumulated losses are more than 50% of stockholder equity (distressed firm) | 324 | 0.27 |
| | 0 | If the accumulated losses are less than 50% of stockholder equity (healthy firm) | 876 | 0.73 |
| FDR (Altman Z-score) | 1 | If Altman Z-score is less than 1.21 (toxic zone) | 348 | 0.29 |
| | 2 | If Altman Z-score is between 1.21 and 2.9 (gray zone) | 600 | 0.50 |
| | 3 | If Altman Z-score is greater than 2.9 (green zone) | 252 | 0.21 |
| M&A | 1 | If a firm involved in mergers and acquisitions activity | 457 | 0.38 |
| | 0 | If a firm does not involve in mergers and acquisitions | 743 | 0.62 |

Source: Own Research.

4.2. Conclusive Statistics

Panel data point to a data set based on which observations are examined by many sectional variables often selected randomly during a given period. Since the panel data contain both aspects of time series data and sectional ones, employing appropriate statistical explanatory models that describe the specifications of the variables is more difficult than the models used in sectional and time-series data [38,39,119].

4.3. Multicollinearity Test

To measure the severity of multicollinearity in a regression analysis, the variance inflation factor (VIF) index can be used. The VIF index measures how much the variance of an estimated regression coefficient is increased due to collinearity. As for the VIF value, if the VIF of the estimated model coefficients is less than ten, there would be no linearity problem [39,53,194,195]. Our findings confirm that the value of all independent variables in the model is less than five, meaning there is no linearity related to the research hypotheses.

4.4. Partial F-Test

As with the OLS approach, after estimating models whose dependent variable has two class values, there are cases of coefficients of the variables of a model that need to be compared. A partial F-test is used to determine whether or not there is a statistically significant difference between a regression model and some nested version of the same model. A nested model is simply one that contains a subset of the predictor variables in the overall regression model. The reduced model is nested within the full model. The variable used in the reduced model is a subset of the full model. For example, in our research model, there may be a view that the coefficients of variables of the institutional owner and (CSR * institutional owner) are equal. In fact, someone may think that the offsetting effect of institutional ownership on the association between CSR and FDR can be endogenous. In this research, we wanted to know if the variable of (CSR * institutional owner) is removed from the model, does it result in a statistically significant increase in the sum of the squared errors a.k.a residuals sum of squares? In other words, does it lead to increased error in the model and hence a decrease in the predictive power of the model? Conversely, does including (CSR * institutional owner) in the model significantly decrease the error and meaningfully increase the predictive power of the model? To determine if the full model is significantly better, we have to check if the sum of squared error (SSE) a.k.a. the residual sum of squares (RSS) is significantly lower in the full model as compared to the reduced model. A partial F-test is used in this study to compare the SSE of the full and reduced models to see if there has been a remarkable change in SSE due to the removal of a term and hence a significant change in how well the model fits or predicts the observed data [196,197]. In general, when the model includes the moderating variable of (CSR * institutional owner), the results of the partial F-test show that R-square and residual standard error (RSE) are 0.6716 and 1.521, while the results of R-square and RSE for the reduced model excluding the moderation variable are 0.6708

and 1.522. Hence, as both the predictive power of the full model is increased due to the existence of (CSR * institutional owner) variable and the residual standard error (RSE) is less compared to the reduced model, excluding its moderating variable, we can conclude that the full model is better for this study.

4.5. Endogeneity Test

It is typically assumed that as the values of the explanatory variables are shaped in the outside world, they are exogenous; however, since the error terms are an outgrowth of the relations within the model, they are endogenous. Building on one of the key regression assumptions, there should be no correlation between the explanatory variables of a research model and the error terms [53]. When this hypothesis is not supported, the estimator of regression is no longer reliable and the resulting parameters cannot be relied on because they have a bias, which is called endogeneity bias. According to the econometric principles, instrumental variables can be employed to solve the endogeneity bias problem. In this study, we use the methods of the two-stage least squares (2SLS), generalized method of moments (GMM), and limited information maximum likelihood (LIML) in Eviews software to estimate the model with instrumental variables to address endogeneity concerns [53]. In the same vein, Boubaker et al. [28] argue that instrumental variable (IV) approaches are commonly used in accounting research like financial distress risk (FDR) when the regressor variables are endogenous. In this study, after doing an endogeneity test, our results show since the amount of *p*-value for the regressor endogeneity test is more than five percent, we can conclude that the exogeneity of the variables has been confirmed with a 95% confidence level.

4.6. Unit Root Test

In statistics, a unit root test can be employed to investigate if a time series variable is non-stationary and possesses a unit root. The null hypothesis is generally defined as the presence of a unit root and the alternative hypothesis is stationary [38,53]. Based on the existing literature, Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) have been recognized among the most popular unit root tests [53]; hence, both of them are used in this research. The results of unit root test are shown in Table 5.

Table 5. The results of the unit root test.

| Variable | Augmented Dickey-Fuller (ADF) | | Phillips-Perron (PP) | |
|--------------------|-------------------------------|-----------------|----------------------|-----------------|
| | Statistic | <i>p</i> -Value | Statistic | <i>p</i> -Value |
| FDR | 40.704 | 0.0197 ** | 21.441 | 0.0049 *** |
| CSR | 246.479 | 0.0001 *** | 284.725 | 0.0016 *** |
| Intitutional Owner | 322.094 | 0.0000 *** | 387.659 | 0.0002 *** |
| GDP | 242.039 | 0.0000 *** | 237.470 | 0.0000 *** |
| Inflation Rate | 365.632 | 0.0000 *** | 464.988 | 0.0000 *** |
| ROA | 366.124 | 0.0000 *** | 470.113 | 0.0000 *** |
| Current Ratio | 358.235 | 0.0000 *** | 405.279 | 0.0000 *** |
| Leverage | 320.131 | 0.0024 *** | 407.973 | 0.0000 *** |
| Firm Size | 227.124 | 0.0010 *** | 312.518 | 0.0056 *** |
| Firm Age | 213.325 | 0.0000 *** | 304.056 | 0.0000 *** |
| RPT-Purchase | 419.011 | 0.0000 *** | 524.458 | 0.0000 *** |
| RPT-Sale | 403.911 | 0.0000 *** | 496.560 | 0.0000 *** |
| RPT-Loan | 86.6977 | 0.0001 ** | 106.084 | 0.0000 *** |
| M&A | 12.084 | 0.0345 * | 10.017 | 0.0184 ** |
| Manager Tenure | 313.460 | 0.0000 *** | 380.527 | 0.0000 *** |

(***): 99% Confidence level, (**): 98% Confidence level, (*): 95% Confidence level.

According to the outcomes obtained from the unit root tests, as the *p*-value for all variables is less than 0.05%, our research variables seem to be stationary, representing efficient regression and very accurate results. In other words, our output witnesses that the

variables of this study are real and stationary, and they can be employed in the regression with high reliability.

4.7. Result of the Research Model

In this paper, first, we wanted to investigate if there is a significant association between corporate social responsibility disclosure (CSR) and financial distressed risk (FDR). We also wanted to know what kind of association there is between institutional owners and corporate bankruptcy likelihood. The third purpose is evaluating whether firms with higher institutional ownership that tend to disclose CSR can save themselves from bankruptcy risk. To assess FDR, we used two accounting-based criteria called Article 141 of Iran's business law as well as the Altman Z-score model. Hence, the results of all the research hypotheses for both models are presented in Table 6.

Table 6. The results of the first model.

| Variable | The Model Measured by Article 141 | | The Model Measured by Altman | | VIF |
|---------------------|-----------------------------------|------------|------------------------------|------------|----------|
| | Coefficient | p-Value | Coefficient | p-Value | |
| C | −11.93461 | 0.0385 * | — | — | — |
| CSR | 2.543067 | 0.0355 * | −2.517902 | 0.0187 ** | 1.176335 |
| Institutional Owner | −1.210544 | 0.0063 *** | 0.986197 | 0.0390 * | 1.443484 |
| CSR*InsOwner | −3.877827 | 0.0044 *** | 2.359491 | 0.0484 * | 2.784561 |
| GDP | 0.034317 | 0.0941 | −0.005974 | 0.2995 | 1.789555 |
| Inflation Rate | −0.032035 | 0.2087 | 0.005212 | 0.7016 | 1.594352 |
| ROA | −16.55876 | 0.0000 *** | 23.47304 | 0.0000 *** | 1.535231 |
| Current Ratio | −2.038486 | 0.0043 *** | 1.995806 | 0.0000 *** | 1.225032 |
| Leverage | 6.135481 | 0.0000 *** | −4.601931 | 0.0000 *** | 1.151607 |
| Size | −0.965850 | 0.0200 ** | 0.393562 | 0.1023 | 1.410765 |
| Age | −0.020385 | 0.1924 | 0.014780 | 0.0396 * | 1.103025 |
| RPT-Purchase | 0.206505 | 0.7304 | 2.371927 | 0.0000 *** | 3.962617 |
| RPT-Sale | −0.131643 | 0.8090 | 2.191819 | 0.0000 *** | 2.202221 |
| RPT-Loan | −0.353058 | 0.9132 | 1.437747 | 0.3403 | 1.112899 |
| M&A | −0.472499 | 0.0007 *** | 0.827954 | 0.1307 | 1.049284 |
| Manager Tenure | −0.114348 | 0.2794 | 0.101550 | 0.0603 | 1.449970 |
| Industry Indicator | Yes | | Yes | | |
| Year Indicator | Yes | | Yes | | |

FDR measured by Article 141 of the Iran Business Law, Method: logistic regression. McFadden R-squared: 0.6812, Prob. (LR Statistic): 0.0000. FDR measured by Altman Z-score, Method: multinomial logistic regression. McFadden R-squared: 0.7032, Prob. (LR Statistic): 0.0000. Note: *** (99% confidence level), ** (98% confidence level), * (95% confidence level).

In this research, McFadden's R² is used to verify the suitability of logistic regression [138]. Given the values of McFadden's R² are 0.68 and 0.70, respectively, for the first and second models that are relatively close to one, our research models have good predictive power. In addition, as the estimated model coefficients of variance inflation factor (VIF) index is less than ten; no linearity problem can be seen in this study. What stands out from Table 6 is that in line with our expectations, the hypotheses of this study are supported. In general, when the risk of financial distress is assessed under Article 141 of the Iran's commercial regulation, our findings experience a positive linkage between CSR and FDR, suggesting disclosure of social responsibility information by firms has no role in the financial decisions of Iranian investors and creditors, and companies with higher CSR may have big difficulty in obtaining the financial resources they needed, which would eventually lead to their bankruptcy. Due to the existence of various cultural and economic reasons in Iran as an Asian country, CSR may not be a very motivating and attractive factor for investors, especially in the economic conditions the Iranian market is facing these days. Further, some evidence has indicated Iranian managers by disclosing CSR information are trying to abuse public trust so that they can eventually take advantage

of earnings management activities [6]. Another interpretation of the positive relationship between CSRD and FDR could be that managers use disclosure of such information as a shield against stakeholders during an economic crisis to be less blamed. Our results also highlight the fact that institutional ownership in the Iranian market has been one of the most effective corporate governance mechanisms saving companies from the risk of bankruptcy during the economic crisis. As lenders and investors cannot simply trust such firms with a high risk of collapse, these firms are likely to show a beautiful picture of their financial situation so that they can absorb better financial resources and attract more investors [38,53]. Given institutional shareholders in the Iranian market have a long-term perspective due to having a large number of shares, it seems that their presence will lead to stronger regulatory action, reduce information asymmetry, and improve the company's financial performance. It should be also noted that institutional ownership decreases corporate bankruptcy likelihood since the government is always able to seize market power with its monetary and fiscal policies and make state-owned companies prosper. Most importantly, our findings show institutional owners have a negative moderation role in the connection between CSRD and FDR. In other words, companies with higher institutional owners that disclose more CSR information can save themselves from bankruptcy. Because both of them are in line with long-term attitudes, they can contribute to the company's economic growth. As stated before, institutional investors in Iran mainly have long-term investment views, and CSR disclosure has long-term economic positive effects. Therefore, because institutional owners have a strong belief in the positive effects of CSRD, they disclose all CSRD-related information thoroughly and honestly, which ultimately will build capital market confidence.

Regarding financial ratios, there is a negative linkage between the current ratio and ROA with FDR. This implies that managers of companies that have been able to use the company's assets and resources for profitability efficiently and also have more ability to repay their debts have succeeded in escaping the risk of collapse and failure. Compared to small firms, larger firms have been able to get out of the financial crisis due to richer information resources and more financial resources. Moreover, consistent with the view that mergers and acquisitions (M&A) can be a way of gaining a competitive advantage in the market [177,178], our results saw a negative association between M&A and corporate failure. However, this study found that the leverage variable is positively correlated with corporate insolvency. To put it another way, Iranian companies that use less cash and borrow more to finance their assets are pursuing aggressive policies, which has led to their financial insolvency. The aggressive strategy is a risky strategy characterized by low financial liquidity [198]. According to this risky approach, firms often tend to increase short-term liabilities in the liabilities structure. If there is free cash, they will be immediately intended to settle short-term liabilities, meaning these firms have a higher current ratio [198]. The reason why one of the aggressive approaches called immediate debt settlement (higher current ratio) has been effective in counteracting bankruptcy, but another approach called borrowing (financial leverage) damage to the company is rooted in the destructive effects of inflation on the value of the national currency. In Iran's inflationary economy, the value of cash is declining every day due to rising inflation [38]. Therefore, if there is cash, companies that tend not to keep cash and use it to pay off their debts will be more successful. Finally, we did not find any robust evidence showing that different types of related party transactions can affect corporate performance.

In the next stage, when this study uses the Altman Z-score model to assess the risk of corporate bankruptcy, the results of the main research hypotheses are the same as in Article 141, although significant differences are observed in some control variables. For instance, according to the Altman model, our evidence supports a negative relation between firm age and financial distress risk. In line with the theory of learning by doing [53], we can say older companies, due to the high experience they have gained during their years of operation, have been better able to continue their business activities and overcome their problems. Moreover, our results have confirmed purchase and sale-related party

transactions reduce corporate failure risk. In fact, Iranian companies seem to have tried to use the unique experience, expertise, and skills of related parties to get out of the financial crisis more easily, which is consistent with the efficient transaction theory. As far as we know, RPTs can reduce transaction costs and enhance the enforcement of property rights and contracts [199]. In this regard, Marchini et al. [199] argue that when firms have appropriate corporate governance mechanisms, RPTs can be useful business exchanges and meet specific firm needs. Perhaps, it can be said to some extent that the existence of institutional owners in the structure of Iranian companies has caused them to force managers to take more steps to inform the company's shareholders and reduce information asymmetry and agency problems by disclosing more information about RPTs. Finally, contrary to the evaluation of the model under Article 141, the results of the Altman Z-score model did not find valid evidence of a significant relationship between firm size and mergers and acquisitions (M&A) actions with financial distress risk.

5. Conclusions

The results of this study stated that there is a positive association between the level of corporate social responsibility disclosure (CSR) and financial distressed risk (FDR), which is inconsistent with the findings of Boubaker et al. [28] in the US market. Iranian firms with higher CSR disclosure have big difficulties in financing and are likely to go bankrupt as investors and creditors think that companies use CSR disclosure as an opportunistic and deceptive tool to get better financing during the financial crisis, which is largely in line with the views of Muttakin et al. [89] and Salehi et al. [6]. It also appears that the lack of mandatory disclosure, and a strong legal and regulatory system have made the quality of CSR disclosure poor, and this has led to it not playing a significant role in investors' financial and investment decisions. Furthermore, the reason why people in Asian countries do not pay attention to the concept of CSR is partly rooted in their culture and lifestyle [21]. The bitter truth is that developing countries often are facing extreme challenges with high inflation, economic problems, education, social justice, and so on [6]. In the same vein, Salehi et al. [6] argue that owing to severe economic sanctions against Iran and the high financial pressures on companies, managers have a strong motivation for manipulating accounting figures to better show their financial performance to attract more investors. Firms with higher CSR disclosure having unfavorable financial conditions are expected to abuse the public's trust and attempt to manipulate financial statements to mask their poor financial performance. In addition to all the above points, the positive relationship between CSR and FDR can be interpreted and justified from two other perspectives. First, Iranian firms with positive CSR have lower costs associated with socially irresponsible behavior [24]. Since bad financial events are likely to occur during an economic crisis, distressed companies try to use more CSR as a shield so that they can be less blamed and punished by stakeholders later. Second, CSR is an expensive action because being socially responsible entails extra expenditures [47]. Thus, CSR disclosure may cause frustration and annoyance among the company's major shareholders and they may decide to take out their capital because they feel that such costly actions in the current economic slump will damage the company's profitability.

The study found concrete evidence that firms with higher institutional owners do enjoy a lower risk of financial distress, suggesting that better regulatory actions on the performance of managers are rewarded with fewer financial defaults. Our findings are in line with the studies of Abdullah [93], Bjuggren et al. [95], Hanifah and Purwanto [96], Cinantya and Merkusiwati [97], Fathonah [98], Mukaria et al. [49], Mira [50], Daryaei and Fattahi [51], and Ling et al. [52]; however, our results are not similar to the results of Shin-Ping and Tsung-Hsien [114], Fazlzadeh [115], and Paek et al. [116]. According to the agency theory, since institutional owners effectively monitor the company's actions to prevent opportunistic managers from harming shareholders' interests, they can reduce agency conflicts and improve corporate performance [43–45]. As stated earlier, Iranian managers have big motivations for manipulating financial reports so they can show a beautiful picture

of their financial situation. First, in the unfortunate economic conditions of the Iranian market, banks are reluctant to lend to companies because it is very risky. Second, Iranian managers' performance is evaluated based on profitability. As institutional shareholders in the Iranian market have a long-term investment horizon, they do stronger regulatory actions to stop the opportunistic managerial behavior. Besides, institutional shareholders mainly surround the ownership structure of Iranian companies, which leads to government control and domination of companies' economic policies. Accordingly, institutional owners decrease corporate insolvency likelihood, for the government is always able to seize market power with its monetary and fiscal policies and make state-owned companies prosper. In the last step of this study, we find that institutional owners modify positively the association between CSRD and corporate financial performance. Due to the full alignment of CSRD goals with institutional investors with long-term goals, the results show that companies with more institutional owners disclosing more CSR information can avoid the risk of bankruptcy.

The findings of our study have several practical implications for different groups. First of all, by reviewing various studies on CSR disclosure, this study tried to show to some extent that the understanding of the CSR concept in developed countries due to higher public awareness, stronger regulatory rules, and less economic, cultural, and social problems can be completely different from developing markets. The results of this study warn investors and creditors that in emerging markets, companies' disclosure of social responsibility can in no way be a good basis for trusting them, especially if these companies are in a financial situation where there is a possibility of opportunistic and abusive incentives. Besides, firms should carefully evaluate the risk of CSR investing and its influence on financing in emerging markets. Based on legitimacy theory, companies only disclose CSR information when it is required by law and regulations to meet requirements from the government or to avoid fees and penalties [200]. Accordingly, this research also will make aware Iranian regulators and policymakers of the fact that if they do not enforce rules of CSR mandatory disclosure and take steps to build a strong corporate governance system, the corporate financial bankruptcy risk increases day by day, resulting in the investment attractiveness of the Iran market to dwindle. Finally, considering the effective regulatory measures of institutional owners on the performance of companies, the results of this study showed to capital market policymakers that institutional ownership can be one of the most effective corporate governance mechanisms to reduce agency problems in emerging markets where there is a lot of motivation for financial misreporting. Finally, when conducting any research, there are some restrictions on the researcher, and our study is no exception. How to calculate the measurement variables of each study may be slightly different from another research, so in generalizing or comparing the results, researchers are advised to pay attention to these cases. High inflation in the Iranian economy in recent years has affected the financial statements of Iranian companies, and the existence of such inflation may distort the results of this study, which are obtained using financial statements based on historical cost. Hence, given that the period of the present study in Iran coincides with a financial crisis caused by sanctions, and that the sample companies may be different in terms of size, organizational structure, and type of products, generalization of our results should be made with caution.

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