

Impact of International Trade and Foreign Direct Investments on Systemic Risk in Tehran Stock Exchange Companies

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Abstract: The purpose of this research was to investigate into the impact of international trade and foreign direct investments on systemic risk in companies listed on the Tehran Stock Exchange. This research is important because it shows managers, investors, shareholders, and financial analysts that foreign investment increases stakeholders' knowledge of responsibility due to the role it can play in sustaining the relationship between the business unit and its stakeholders. The company's responsibility to society is considered in investment and financial decisions. This research's statistical population covered all companies listed on the Tehran Stock Exchange from 2014 to 2017. The data was analyzed using SPSS and EViews. To test the research hypotheses, the following econometric models were utilized. The findings revealed that international trade and foreign direct investments had an impact on systemic risk in Tehran Stock Exchange companies.

Keywords: International trade, foreign direct investments, systemic risk, and stock exchange

Introduction

Each country's success is determined on its ability to acquire superior technology and technical expertise, attract more foreign development, implement sound economic policies, and master the art of deploying human resources. However, a substantial portion of the world's research and development investment is made by industrialized countries, and more than 90% of these expenses are spent on the development of industrialized countries, and more than 90% of these expenses are made by the Group of Seven countries. Trade and investment liberalization policies have been the most important factors of long-term growth among all types of political tools. However, the effects of trade liberalization and investment policies on economic growth will be considerable and stable if the increase in investment and trade liberalization is matched with productivity improvement. Trade liberalization also expands the supply of higher-quality intermediate inputs with lower residuals, resulting in higher productivity. Systemic risk refers to the risk that is tied to the entire market. This sort of risk, also known as "non-eliminable risk" or "market risk," affects the entire market rather than simply a single company or industry's stocks. This type of risk is both unexpected and entirely avoidable.

The relative value of primary resources and cheap labor is diminishing. Economic development today, regardless of scientific and technological development, is difficult to predict. As a result of expanding domestic development activities and attracting international development (via foreign trade and foreign direct investment)

by improving production methods, developed countries gradually dedicated their economic capacities to the production of more complex and diverse goods and services, with the result that the majority of these countries' economic capacities are now dedicated to the production of goods with advanced technology. The costs of its product's research and development in the form of technology, innovation, and technological improvements enter the production function. The inclusion of this variable in the production function and economic growth models is also effective in influencing and modifying society's economic, social, and technological structures in terms of production input productivity (Benhaeab & speegel, 2019: 13).

Aside from the high rate of return, development is recognized not just in countries. To close the growing technological gap, developing countries, like Iran, can transfer technology and technical processes through international trade and attract foreign direct investment, and they can attract and be local with significant development investment. expand internationally Because any developing country that makes greater use of foreign investments made in developed countries benefits more. In other words, the transfer of technological knowledge and research and development activities through international trade and foreign direct investment can increase the percentage of productivity growth of all factors in any country's economic growth (Cheng & Dinopaise, 2017: 14).

Foreign company entry, on the other side, has provided technology and technology management, which aids in increasing productivity. Foreign direct investment will also increase the productive capacity of domestic industry if foreign companies supplement native companies (Cristiensen & Comingz, 2018: 10). Indirect advantages are also created as a result of international trade's role in defining a country's social potential to reach the level of advanced countries. International trade can also increase a country's productivity by providing access to intermediate goods (Hejazi and Safarian, 2016: 26).

In financial and economic knowledge, systemic risk is a risk generated by broad market factors that impacts the overall price of securities in the financial market at the same time. Economic, political, and social phenomena such as exchange rate factors, business cycles, and government monetary and financial policies all contribute to this sort of risk (Machinen, 2016: 18). Systemic or inescapable risk is not exclusive to one or more companies, but to the entire market, and among the factors influencing it are macro-government policies, exchange rate fluctuations, inflation, business cycles, and so on. Because this form of risk is tied to the general status of the market and its swings and cannot be minimized in a properly diversified portfolio of securities, it is also known as irreducible or unavoidable risk. The systemic risk of the stock collection is important from the perspective of the shareholders, which implies that the judgment about each stock is based on its systemic risk rather than its standard deviation of return. According to the new stock portfolio hypothesis, unsystematic risk can be minimized but systematic risk remains. The beta index is a risk statistic that measures the consistency of a company's movement with the movement of the overall market (Co'e et al., 2017: 15).

International trade and foreign direct investments on systemic risk in companies listed on the Tehran Stock Exchange were investigated in this research, and the question of whether international trade and foreign direct investments have an effect on systemic risk in companies listed on the Tehran Stock Exchange was answered. or not

Direct foreign investments

Investment is a critical and vital component of every country's economic growth and development. A variety of funding sources are required to supply the necessary capital for investment. As a result, when examining various sources of funding, financial managers should pay attention to the company's risk and return, as well as its impact on the risk and return of the company's common stock in the stock market. A company's risk is determined by a variety of factors. One of these factors is the company's capital structure. (the amount of debt and how much the company has contributed to its capital structure). Because employing debt generates a series of set responsibilities (financial costs) for the company, these fixed obligations increase the company's risk because if the company cannot repay the principle and sub-loans, it will fall into financial impotence (and eventually bankruptcy). In capital markets, the risk creation process is important. Financial leverage is one of the risk factors, according to financial theories. Choosing an optimal debt ratio that can minimize risk while considering appropriate return is a step toward the main goal of corporate financial management, which is to increase the value of the company and, as a result, the wealth of the shareholders (Islami Bigdali et al., 2018: 91).

Systemic risk

Risk is defined in the dictionary as the possibility and probability of damage and loss. However, the probability distribution of each investment's rate of return is used to define financial and quantitative risk. Based on this, the rate of assets such as securities can be described as the change in the probability of the future rate of return produced by them, and the standard deviation of an asset's return can be regarded as a risk measure

(Pirasalehi and Zainel Hamdani, 2013: 36). Risk in investment refers to the potential that the actual return (in rials or percentage) would differ from the predicted return (Brigham et al., 2014: 37).

The Islamic financial system, like the conventional financial system, contains risk. In general, being a representation of Islamic financial products, sukuk is intrinsically riskier than other financial securities (Gholizadeh, 2017: 2). This is because practically all Islamic financial instruments are based on asset ownership, and hence the risk of that asset is shifted to investors (Adam and Thomas, 2014: 8).

International trade

Actually, international trade refers to trade interactions, or the export and import of goods and services between different countries around the world. Because no drawer can be received from the beginning to the present that efficiently meets all of its wants and requirements without having business relations. To meet its needs, it must create trade links with other countries. As a result of the provisions and profitability, international trade is developed as a result of supply and demand linkages for goods and services between different countries throughout the world. Today, international trade has taken on a more advanced and modern shape, creating eases for trade connections between countries, and these eases and technical progress have accelerated the impacts on the supply and demand of goods at the global market level, as an example of these eases. For example, the value of the US dollar rises against the Pakistani rupee. According to information in both countries, this example is considered a convenience and plays a significant role in the speed and progress of business. Since ancient times, there have been trade relations between people, where individuals have engaged in this business to obtain provisions and meet the needs of society, such as in Khosharma (Afghanistan), where traders took goods and goods from China to Mawranhar and then to They used to transfer it to Baghdad or from Mauranhar to China through this way.

The father of economics was English economist Adam Smith, and David Ricardo was the founder of the school of freedom of international exchange, which is specialized due to the international division of labor (Adam Smith), and David's relative superiority has been considered as one of the driving factors of international trade and its development, and the freedom of exchange for all Nations has known the step of progress. Adam Smith, who felt that lowering trade barriers and establishing exchanges in free trade would benefit all countries involved in the transaction, gave more attention to the international division of labor specializing in the global production of goods in his theories. He goes on to say that any country that wishes to participate in international exchanges, i.e. produce and import goods for the global market, must have complete knowledge of the subject. If no country can produce all of the goods needed in the world and cannot even produce the needs of its own country, and if they do not have all of the raw materials used in factories to produce essential and luxury goods, a country should produce that it has the raw materials at its disposal and, secondly, that it has complete expertise in its production. For example, if a country produces goods while considering expertise and using domestic raw materials, on the one hand, the cost will be lower in proportion to the costs, and on the other hand, by using expertise that leads to strengthening the quality and quantity of the produced goods, it will gain a special place in international exchanges. Profits are made in international marketplaces, and if a country joins the world market by importing goods with the lowest production costs, the stated country has an absolute edge (Sarel, 2017: 5).

Research Methodology

This research is classified as applied research since it seeks to investigate the purpose of corporate governance and financial constraints on the investment efficiency of companies listed on the Tehran Stock Exchange. Applied research is research that applies basic research ideas, rules, principles, and procedures to solve practical and real-world problems. The current research is correlational in nature and method, with regression analysis employed to produce model coefficients.

Model (1) is used to test the main hypothesis:

$$INVEFF_{it} = \beta_0 + \beta_1 SRISK_{it} + \beta_2 SIZE_{it} + \beta_3 FDInvestments_{it} + \beta_4 ITrade_{it} + \beta_5 AGE_{it} + \epsilon_{it}$$

To test the sub-hypotheses, the following models were used:

$$INVEFF_{it} = \beta_0 + \beta_1 SRISK_{it} + \beta_2 SIZE_{it} + \beta_3 FDInvestments_{it} + \epsilon_{it}$$

$$INVEFF_{it} = \beta_0 + \beta_1 SRISK_{it} + \beta_2 SIZE_{it} + \beta_3 ITrade_{it} + \epsilon_{it}$$

This research's statistical population comprises all companies that were listed on the Tehran Stock Exchange between 2014 and 2017. Two ways were used to collect related information. The first strategy is concerned with the compilation of theoretical underpinnings and the defining of research variables, as employed by the library method and the text of linked published articles and books. The field approach was employed to acquire research data in the second section. The data was derived from the language of the selected stock firms'

audited financial statements, as well as the use of the Codal.ir and Tse.ir systems, as well as other required reports.

This research was carried out during the years 1394 and 1397.

The geographical scope of this research is the companies listed on the Tehran Stock Exchange.

The purpose of this research is to investigate the impact of international trade and foreign direct investments on systemic risk in companies listed on the Tehran Stock Exchange, which is one of the financial management subjects.

Finding

The initial hypothesis was put to the test.

The first hypothesis is that international trade and foreign direct investments have an effective impact on systemic risk in companies listed on the Tehran Stock Exchange.

The research model was as follows

$$INVEFF_{it} = \beta_0 + \beta_1 SRISK_{it} + \beta_2 SIZE_{it} + \beta_3 FDI_{investments_{it}} + \beta_4 ITrade_{it} + \beta_5 AGE_{it} + \epsilon_{it}$$

The results of fitness the aforesaid regression equation are presented in Table 8-4 after testing and confirming the regression assumptions. The F statistic (14.765) represents the overall significance of the regression model. The coefficient of determination and adjusted coefficient of determination of the above model are 52.8% and 48.1%, respectively, as shown in the lower section of Table 8-4. As a result, only roughly 1.48% of the dependent variable changes of the researched companies are explained by the specified independent and control variables in the mentioned regression equation. The positive (negative) numbers in the coefficient value column in this table represent the direct (inverse) impact of each variable on financial performance.

According to Table 1, the research variables' significance level (sig) is lower than the current research's significance level (5%); also, the absolute value of the t statistic associated to these variables is greater than the t statistic obtained from the table with the same degree of freedom.

Table 1. The outcomes of the regression equation fitness

| Variable | Coefficient | Value | T | Sig. |
|---------------------------------------|-------------|-------|-------------------------|--------|
| Constant | β_0 | 0.876 | 2.873 | 0.004 |
| SRISK | | 0.968 | 2.231 | 0.046 |
| investment | | 0.656 | 2.876 | 0.021 |
| SIZE | | 0.307 | 2.921 | 0.016 |
| ITrade | | 0.911 | 2.129 | 0.041 |
| AGE | | 1.121 | 2.273 | 0.0027 |
| Coefficient of determination | 0.528 | | F | 14.765 |
| adjusted coefficient of determination | 0.481 | | P | 0.000 |
| | | | Watson durbin statistic | 1.932 |

Watson durbin statistic, as you can see, is close to 2. As a result, the assumption of non-autocorrelation has been met, and no more action is required. The coefficient of determination is 0.53, indicating the independent variable's influence and explanatory power on the dependent variable. Furthermore, at the error level of 0.05 (significance level 0.05), the relationship between international trade, foreign direct investments, and systemic risk of company stocks was significant. As a result, the research hypothesis has been confirmed.

The second hypothesis was put to the test.

International trade has an effective impact on systemic risk in companies listed on the Tehran Stock Exchange.

The research model is as follows

$$INVEFF_{it} = \beta_0 + \beta_1 SRISK_{it} + \beta_2 SIZE_{it} + \beta_3 ITrade_{it} + \epsilon_{it}$$

In this model, the null hypothesis and the opposing hypothesis are as follows:

$$\begin{cases} H_0 : \\ H_1 : \end{cases} \begin{cases} \beta_1 = \beta_2 = \beta_3 = \beta_4 = 0 \\ \beta_i \neq 0 \quad i = 1,2,3,4 \end{cases}$$

The model with fixed effects is estimated in the table below, and the significance probability value of F is equal to 0.000. This is a value smaller than 0.05. As a result, the null hypothesis is rejected at 95% confidence, indicating that there is a significant model with 95% confidence. The coefficient of determination is 0.63, indicating that the independent and control variables account for approximately 63% of the changes in the dependent variable. The Watson durbin statistic is equal to 1.82; values close to 2 suggest a lack of residual autocorrelation, which is another assumption of regression. (As a result, no autocorrelation exists between the residuals.)

Table 2. The model fit for the second hypothesis

| Parameters | Value | T | P | Result |
|------------------------------|-------|-------|---------------|--------------------------|
| constant | 0.428 | 4.268 | 0.001 | significant |
| SRISK | 0.359 | 8.268 | 0.002 | Significant and positive |
| ITrade | 0.412 | 7.258 | 0.004 | Significant and positive |
| AGE _{it} | 0.192 | 9.722 | 0.000 | Significant and positive |
| SIZE | 0.012 | 2.204 | 0.003 | Significant and positive |
| F | 9.12 | | F | 0.000 |
| Coefficient of determination | 0.63 | | Durbin watson | 1.82 |

It is equal to 8.268 (significant and positive) for SRISK, indicating that the systemic risk criteria under consideration are effective on international trade indicators. It is equal to 7/258 for ITrade (significant and positive). The coefficient of this variable reflects international trade, which signifies that international trade based on companies listed on the stock exchange is effective on financial statement presentation. The presence of a significant relationship implies that all of the variables associated with this hypothesis were significant. As a result, the second research hypothesis has been confirmed.

Table 3. Investigating the second hypothesis

| Variables | Coefficient of determination | Standard | Standard error | T | Sig. | Durbin watson |
|-----------|------------------------------|----------|----------------|----------|--------|---------------|
| intercept | | 0.66395 | 0.052369 | 11.75248 | 0.001 | |
| SRISK | 0.63 | 0.10852 | 6.53698 | 0.078963 | 0.0236 | 1.8215 |
| ITrade | | 0.089635 | 0.063598 | 1.36598 | 0.0152 | |
| SIZE | | 0.078563 | 6.236582 | 0.529687 | 0.0269 | |

Watson durbin statistic, as you can see, is close to 2. As a result, the assumption of non-autocorrelation has been met, and no more action is required. The coefficient of determination is 0.63, indicating the independent variable's influence and explanatory power on the dependent variable. The correlation coefficient between international trade and systemic risk shows a significant relationship between these two variables. Furthermore, the relationship between these two variables was significant at the 0.05 error level (significance level 0.05). As a result, the research hypothesis has been confirmed.

Third hypothesis test

Foreign direct investments in companies registered on the Tehran Stock Exchange have an effective impact on systemic risk.

$$INVEFF_{it} = \beta_0 + \beta_1 SRISK_{it} + \beta_2 SIZE_{it} + \beta_3 FDI_{investments_{it}} + \epsilon_{it}$$

Table 4 shows the results of fitness the given regression equation after evaluating the regression assumptions and ensuring that they are established. The F statistic value (8.676) also represents the overall significance of the regression model. The coefficient of determination and adjusted coefficient of determination of the above model are 37.8 percent and 33.9 percent, respectively, as shown in the lower portion of Table 11-4. As a result, it is possible to conclude that in the aforementioned regression equation, the independent and control variables explain only roughly 33.9% of the dependent variable variations of the analyzed companies. The

positive (negative) numbers in the coefficient value column in this table represent the direct (inverse) impact of foreign direct investments on systemic risk.

Table 4. The outcomes of the regression equation fitness

| Variable | Coefficient | Value | T | Sig. |
|---------------------------------------|-------------|---------------|-------|-------|
| constant | β_0 | 0/651 | 0/223 | 0/823 |
| SRISK | β_1 | 0/665 | 1/451 | 0/332 |
| FDInvestments | B_2 | 0/448 | 1/339 | 0/288 |
| AGE | B_4 | 0/245 | 3/073 | 0/013 |
| SIZE | B_6 | 0/337 | 2/665 | 0/037 |
| Coefficient of determination | 0/378 | F | | 8/676 |
| adjusted coefficient of determination | 0/339 | P | | 0/025 |
| | | Durbin watson | | 1/966 |

According to Table 4, the significance level (sig) of the variables of foreign direct investments and the proportion of systemic risk is higher than the significance level considered in the current research (5%). Furthermore, the absolute value of the t statistic for these variables is greater than the t statistic produced from the table with the same degree of freedom. As a result, the H0 hypothesis is confirmed at 95% confidence, while the H1 hypothesis, that foreign direct investments influence the proportion of systemic risk, is denied.

Table 4. Summary of the results of research hypotheses

| Hypothesis | Model | Result |
|------------|--|-----------|
| 1 | $INVEFF_{it} = \beta_0 + \beta_1 SRISK_{it} + \beta_2 SIZE_{it} + \beta_3 FDInvestments_{it} + \beta_4 ITrade_{it} + \beta_5 AGE_{it} + \epsilon_{it}$ | Confirmed |
| 2 | $INVEFF_{it} = \beta_0 + \beta_1 SRISK_{it} + \beta_2 SIZE_{it} + \beta_3 ITrade_{it} + \epsilon_{it}$ | Confirmed |
| 3 | $INVEFF_{it} = \beta_0 + \beta_1 SRISK_{it} + \beta_2 SIZE_{it} + \beta_3 FDInvestments_{it} + \epsilon_{it}$ | Confirmed |

Conclusion and Discussion

The first hypothesis held that international trade and foreign direct investments had an effective impact on systemic risk in companies listed on the Tehran Stock Exchange. According to the findings, Watson durbin statistic is close to 2. As a result, the assumption of non-autocorrelation has been met, and no more action is required. The coefficient of determination is 0.53, indicating the independent variable's influence and explanatory power on the dependent variable. Furthermore, at the error level of 0.05 (significance level 0.05), the relationship between international trade, foreign direct investments, and systemic risk of company stocks was significant. As a result, the research hypothesis has been confirmed. The findings of this hypothesis are consistent with the findings of Mohseni (2016), Abdi et al. (2016), Dalson (2018), and Gerard (2018). (2017). In describing the findings of this research, it can be stated that the government, as an observer and policymaker, plays a significant role in the capital market, and one of the government's responsibilities is to create a program to stimulate the capital market. However, in general, the multiplicity of power and decision-making centers, the ambiguity of the role and relationship of these centers with each other, the interference of the country's three powers, the lack of transparency of the laws and the existence of different and contradictory perceptions of them, the existence of inappropriate and cumbersome laws, the violation of economic freedoms, and the government's political instability. It leads to an increase in systematic risk and, as a result, a significant decrease in investment. The government's measures and level of involvement in the economy, industry, and commerce also have an effect on investment in financial products, which means that the greater the level of government involvement in the economy (reducing private sector participation), the systematic risk increases and the amount of investment in financial products falls. For example, if the government issues bonds to cover its budget deficit, the price and interest rate of these bonds will increase, resulting in a fall in the price of bonds and an increase in the interest rate. In industrialized countries, the capital market is said to as a market that invites participation from all parts of society. However, due to a lack of sufficient culture, only a small fraction of people in undeveloped or emerging countries participate in this market, however if a suitable platform and real attractions can be provided, people's savings can be directed in this direction. This issue will increase national income,

lower inflation, allocate liquidity in the productive market, and increase investment and relative affluence in society.

The second hypothesis was that international trade has an effect on systemic risk in Tehran Stock Exchange companies. The research's findings revealed that Watson Durbin statistic is close to 2. As a result, the assumption of non-autocorrelation has been met, and no more action is required. The coefficient of determination is 0.63, indicating the independent variable's influence and explanatory power on the dependent variable. The correlation coefficient between international trade and systemic risk shows a significant relationship between these two variables. Furthermore, the relationship between these two variables was significant at the 0.05 error level (significance level 0.05). As a result, the research hypothesis has been confirmed. To explain the hypothesis's findings, it can be stated that diverse industries and their companies might experience both success and recession as a result of internal and external political, economic, social, and even geographical variables. For example, if the worldwide price of oil rises, industries associated to oil products will benefit and their stocks will rise; if there is a drought, agricultural industries will suffer and their stocks would stagnate (Abdollahzadeh). On the other hand, the greater the emphasis on intermediate and consumer industries, and the greater their reliance on foreign countries, the greater the systemic risk, which leads to a drop in investment in these areas. Reduced interest rates can be an effective element in increasing investment investments. When interest rates fall, investment costs fall as well, increasing the return on investment. However, when the interest rate is determined by supply and demand mechanisms, the issue of time is ideal, because this type of interest rate reduction, if not accompanied by appropriate tools to control its effects, can increase the investment rate, but it is most likely that investments in non-productive and sometimes "destructive" sectors will be harmful to the economy. Another aspect to consider is that if this job is done without the requisite estimates, given the country's present inflation rate, it may result in some form of invisible loss (risk) for depositors. Another increase in the interest rate increases the risk of interest rate fluctuations because when the interest rate rises, the price of fixed-income bonds falls, and if the holder of these bonds sells them before maturity, he would lose money.

The third hypothesis was that foreign direct investments have an effective impact on systemic risk in companies listed on the Tehran Stock Exchange. The research's findings revealed that the value of the F statistic (8.676) also shows the significance of the entire regression model. The above model's coefficient of determination and adjusted coefficient of determination are 37.8 and 33.9 percent, respectively. As a result, it is possible to conclude that in the aforementioned regression equation, the independent and control variables explain only roughly 33.9% of the dependent variable variations of the analyzed companies. In explaining the results of this hypothesis, it can be stated that an increase in the expected inflation rate also affects investment in financial products, so that as the expected inflation rate rises, the expected rate of return on physical assets rises more than the expected rate of return on financial assets (financial products). In the asset portfolio, physical assets replace financial assets. In a developing economy (business development cycle), as people's wealth and income expand, so does the demand for investment in financial products, which leads to an increase in the price and return on investment in these products. Economic downturns and job losses increase the systematic risk and reduce the amount of investment.

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