

Presenting a model for evaluating the performance of financial accelerators of companies accepted on the Iranian Stock

Presentar un modelo para evaluar el desempeño de los aceleradores financieros de empresas aceptadas en la Bolsa de Valores de Irán

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Summary

Financial accelerators and optimizing their performance have always been one of the most important issues in organizations and companies. This mixed (qualitative-quantitative) research was conducted with the aim of providing a model for evaluating the performance of financial accelerators for companies accepted on the Iranian Stock Exchange. This study was conducted using a mixed method (qualitative-quantitative) in which 21 variables of the model were extracted in the qualitative section and interviews were conducted with 19 experts and determining the relationship between variables to achieve the model in the quantitative part based on interpretive structural modeling (ISM). Qualitative and quantitative data analysis was the achievement of a five-level model that the most influential variables of this model in the fifth level of company Prosperity and recession and asymmetric information and the variables of market constraints, financial cost situation, financing mechanism, financial performance forecast, Short-term interest rates, financial friction, changes in net valuable, insurance costs and credit channels in the first level of this model were the most influential variables of this model, other variables are also connective variables. Serious attention to the period and level of prosperity and recession of companies and if possible the use of appropriate financial methods to predict the period of prosperity and recession can significantly improve the performance of financial accelerators. Also, due to the high effect of asymmetric financial information, the quality and timeliness of this information also affects the performance of financial accelerators.

Keywords: Performance appraisal, financial accelerator, financial shock.

Resumen

Los aceleradores financieros y la optimización de su desempeño siempre han sido uno de los temas más importantes en las organizaciones y empresas. Esta investigación mixta (cualitativa-cuantitativa) se llevó a cabo con el objetivo de proporcionar un modelo para evaluar el desempeño de los aceleradores financieros para empresas aceptadas en la Bolsa de Valores de Irán. Este estudio se realizó mediante un método mixto (cualitativo-cuantitativo) en el cual se extrajeron 21 variables del modelo en el apartado cualitativo y se realizaron entrevistas a 19 expertos y se determinó la relación entre variables para lograr el modelo en la parte cuantitativa basada sobre modelos estructurales interpretativos (ISM). El análisis de datos cualitativos y cuantitativos fue el logro de un modelo de cinco niveles que las variables más influyentes de este modelo en el quinto nivel de la empresa Prosperidad y recesión e información asimétrica y las variables de restricciones de mercado, situación de costos financieros, mecanismo de financiamiento, pronóstico de desempeño financiero, tasas de interés de corto plazo, fricción financiera, cambios en el valor neto, costos de seguros y canales de crédito en el primer nivel de este modelo fueron las variables más influyentes de este modelo, otras variables también son variables conectivas. Una seria atención al período y nivel de prosperidad y recesión de las empresas y, si es posible, el uso de métodos financieros apropiados para predecir el período de prosperidad y recesión puede mejorar significativamente el desempeño de los aceleradores financieros. Además, debido al alto efecto de la información financiera asimétrica, la calidad y oportunidad de esta información también afecta el desempeño de los aceleradores financieros.

Palabras clave: Evaluación del desempeño, acelerador financiero, shock financiero.

Introduction

The consequences of financial accelerators with investment fluctuations have not been considered in current quantitative business models. Therefore, there are very important reasons why investing despite financial accelerators can be important (Tvrvz et al, 2015). The theory that financial conditions may amplify and publish the effects of shocks on the economy is found in the classic texts of Fisher (1933) and Garley and Shaw (1955). But it has long been ignored by macroeconomists because of the effect of Modigliani and Miller (1958) on the non-correlation of capital structure, which has recently appeared as a financial accelerator (BRUNO, 2010). Research has shown that endogenous developments in financial markets can greatly enhance the effects of declining shocks through the economic environment. This boosting mechanism is called the "financial accelerator". The key idea of a financial accelerator is to show that economic shocks to companies' net valuable increase their credit standing (Baková, 2018). In fact, the effect of financial acceleration is that a change in macroeconomic activity causes a change in the net wealth of enterprises economic, due to the positive correlation between the two variables (for example, due to the cyclical agreement between profit and asset prices). Economic disturbances can spread through a financial accelerator mechanism (Almeida & Crocker, 2016). The important thing is that the effects of the financial accelerator can be changed after the financial crisis. The most important effects were the lack of liquidity and changes in the quality of companies' assets, which is also due to heterogeneity in Europe (Carlstrom & Fuerst, 1997). Accelerated financial theory shows the interrelationship between access to credit and stable investment, which helps to amplify cyclical fluctuations. Of course, it does this more transparently in determining stock prices and credit fluctuations. There is considerable material that has largely supported the relationship between credit and macroeconomic fluctuations. In addition, financial acceleration mechanisms have been implemented to some extent in the so-called new Keynesian models. Now that the most important future developments are related to international stock prices in the trading cycle. Therefore, providing a suitable financial accelerator significantly strengthens economic cycles. Special financial studies clearly show that financial accelerators play an important role in publishing severe financial shocks (Eskandari et al, 2018). On the other hand, the need for investment for economic growth and development of any country is undeniable. Resources will be needed to raise the funds needed. The best source of funding is people's savings. Properly direct wandering funds to productive investments, Increase in production and gross national product, it will create jobs and increase income, and ultimately public welfare. So a strong mechanism must direct these savings to the manufacturing sector and provide their financial needs. In terms of capital supply, investors should try to invest their savings in the place that has the highest returns (Almeida & Crocker, 2016). In the meantime, it is the financial accelerators that affect all these factors and can affect the performance of the capital market mechanism (Antonio & Cavalcanti, 2010). For this reason, this study seeks a model for evaluating the performance of financial accelerators of companies accepted on the Iranian Stock Exchange.

Theoretical foundations and research history

It has been experimentally tested before financial crisis and after the financial accelerator, and its role in the financial crisis has been confirmed in the United States, Turkey, and the European Union. Of course, there is general agreement that financial accelerators may not exist after a financial crisis. The financial accelerator can be described as a mechanism in

which the temporal effect of relatively small shocks can lead to continuous fluctuations. This is due to its endogenous role in the margins of financial and credit markets. This concept analyzes the net valuable mechanism, which affects company's costs. The important point is that this mechanism of relatively low financial turmoil and shock can lead to a persistent shock in the economy. Of course, the performance of the financial accelerator can be changed after the financial crisis. Typically, econometric studies of the effects of financial acceleration analyze the investment dynamics of companies (Keshavarz, 2017). Policymakers, academics, and the business media often follow the credit market conditions closely. Central banks regularly analyze interest rates or discuss recent growth trends with respect to commercial lending. Bernanke and Gertler (1989) showed that the existence of asymmetric information in market credit can affect borrowers' balance sheet conditions in the business cycle by playing the role of external financing costs (Hasumia et al, 2018). Bernanke et al. (1999) and other researchers, including Kyotaki and Moore (1997) and Carl Strom and Forrest (1997), showed that financial friction can dramatically increase the measure and stability of economic activity fluctuations. Their review followed this point whether these financial corrections can improve the capability of estimated models for the account and reveal key features of the data, particularly those related to output and investors. Based on the previous work of Bernanke and Gertler (1989), Bernanke et al. (1999) there is a model in which there is a two-way link between corporate borrowing costs and their net valuable. This relationship is known as financial accelerator. Since then, this mechanism has often been referred to as a financial accelerator effect, because the low price of capital has a feedback effect and lowers the net valuable of companies. This was the beginning of research on financial accelerators, and then the scope of this research expanded. Simon Golcris (2003) explained the importance of financial accelerators in financial markets in an article at Boston University. He believed that the effects of financial accelerators varied at different levels of these markets. He believed that financial accelerators and their effects could not be ignored in any way. The need for equations to study the effects of financial accelerators and to obtain these mathematical equations was also one of the results of Golcris's research. Christine and Deeb (2008) investigated the effects of financial accelerators on New Keynesian models. In this research article, they showed that Keynesian models without a financial accelerator are statistically examined and the existence of a financial accelerator is reinforced and this actually promotes the effects of investment demand shocks, but reduces supply shocks. Another result of this study was that the importance of financial accelerator for production fluctuations is relatively small. Brano (2010) studied the concepts and challenges of financial accelerators well. Cork well explained the role of financial information transfer in financial markets and he expressed that despite the theoretical possibilities, empirical evidence on the effect of the economic importance of the financial accelerator is still relatively weak. Of course, he considered new and effective aspects of financial accelerators to be researched. Examining the financial accelerator in the housing market through side effects and the role of monetary policy in a Keynesian estimation model, Carta (2011) studied in his master's thesis at the University of Oslo. In this study, data from 1995 to 2010 were analyzed. The results show that real and monetary shocks that hit the economy affect the net worth and therefore reinforce and stimulate the initial shock and its effects are more stable and longer. Carta has introduced this influential factor as a financial accelerator in its research. In another study, Kamber and Twinson (2012) examined the relationship between financial accelerators and monetary policy laws. Their studies on different companies showed that when financial accelerators decrease, monetary policy reacts to companies' credit differences. Over time and the growth of financial markets, the importance of financial accelerators increased day by day, and therefore research and studies in this field also increased. Estimating the financial accelerator in contracts was also

considered by Karlstrom et al (2014). They showed the positive effects of considering financial accelerators in contracts. In fact, they carefully evaluate the effects of financial accelerators. They concluded that accelerating financial effects should be considered in order to achieve successful financial contracts (Christensen, 2008). The relationship between financial accelerators and the real economy was studied by Hammersland and Terry (2014). In an interesting initiative, they studied macroeconomic models and focusing on credit, asset prices and real economic activity, they proposed a model in their article. In the framework of a model of "central macroeconomics" is quite comprehensive and this is due to the work of financial accelerators, which helps to increase the effects of the shock on the economy. Tevez et al. (2015) investigated the mechanism of financial acceleration in a small open economy. This article focuses on the accelerating mechanism in the Czech economy, and has recently been of great concern to the financial sector and the debt crisis in the European Union. They worked to achieve the right model based on Bernanke's proposed financial accelerator model. The results showed that the use of financial accelerator mechanism improved the economy of the Czech Republic. Financial accelerators in EU banking were studied by Altanbas et al (2016). This study showed that after controlling and reviewing monetary policy, interest rate risk and several banking industries and banking characteristics, the price margin is a special system for European banks. Interestingly, this study found that the performance of financial accelerators supports the European economic situation and its banking. Dimitriev and Haden Bagh (2017) showed the financial accelerator and its independent optimal state in a research article. In the literature, this article mentions the financial accelerator pioneered by Bernanke et al (1999), entrepreneurs are also effective and risk-averse, and loans are assumed at the estimated offer rate. The results of this article showed that the use of financial accelerator optimization can lead to favorable financial forecasts and reduce the risk. Dual and accelerating financial crises are also one of the most important issues that Calabres (2017) studied in his dissertation. The emergence of a banking and currency crisis at the same time is a repetitious theme and newfound economies are also affected by fixed or near-fixed exchange rates. This study pointed out that there is evidence that the exchange is real and decrease value and higher levels of probability of short-term debt increases relative to crisis stocks. Accordingly, recommendations for preventive policies including reducing the organization's costs through improved settings and data transparency. Hasami et al (2018) investigated the issue that Can the use of financial accelerators make it possible to predict financial crises or not? In this study, they used the Markov prediction model for the prediction model. The results of this study suggest that, in particular, drastic changes in monetary policy may impair the projected performance of the model and the financial accelerator provides a powerful review with a dynamic approach. Regarding financial accelerators in Iran, the scope of studies is very limited due to the novelty of the subject among them, we can only refer to the research article of Heidari and Malabahrani (2017) in which the financial accelerator in a DSGE model with the financial and banking sectors of Iran is studied. This study examines the theory of financial accelerator Bernanke et al. (1999) for the Iranian economy. The proposed model has better capabilities than the base model. Based on the reaction shock functions, the shock effect of interest rates on bank deposits on the variables of the real sector of the economy in the proposed model is larger and more stable than the base model and adjusting the effects of shocks in the proposed model takes more time. Therefore, the theory of financial acceleration in the Iranian economy is approved.

Keshavarz (2017) in a study entitled Monetary policy in a financial accelerator model despite price and wage cohesion after estimating the model using Bayesian model and simulation method, the study of instantaneous reaction functions showed, the monetary base inflation,

consumption, Increase investment and employment and thus increase production therefore, in the short run, the hypothesis that money is neutral cannot be accepted. Shaking government spending also increases private sector spending but reduces investment. In general, the effect of government spending shocks on production and inflation is positive. Tahvili et al. (2017) also examined business cycles and financial accelerators in the Iranian economy. In order to test the above effect on the Iranian economy, data related to 298 non-financial firms that are members of the Stock Exchange Organization during the period 2005 to 2015 were used; the results of the model estimate indicated that considering the economic fluctuations in general, the effect of financial acceleration in the Iranian economy is not established. However, by dividing economic fluctuations into periods of recession and prosperity, it became clear that this effect is valid for periods of recession. In other words, with the occurrence of the economic downturn, corporate investment is more affected and further reduced. Also, using virtual variables, it was shown that during periods of recession, smaller firms were more affected by economic fluctuations due to more limited access to financial system resources and credits, and therefore the financial accelerator was stronger for them.

Methodology

This research seeks to provide a model for evaluating the performance of financial accelerators of companies accepted on the Iranian Stock Exchange using a mixed research method (qualitative-quantitative). In order to understand, recognize and extract the variables from semi-structured interview and open coding to reach the variable and to complete the self-interaction matrix from the opinions of experts and modeling of these variables has been done using interpretive structural modeling (ISM). This research is considered as an applied goal. However, library studies have been used to provide theoretical foundations and history for financial accelerator research. The statistical population of this study includes a collection of academic experts and specialists familiar with the financial accelerator. The criterion of sample size is theoretical adequacy; this means that in the interview with the elite statistical community, no new index or variable is identified. Therefore, the criterion of sample adequacy is theoretical saturation. Using targeted selective sampling method, initially 11 people were identified as the sample of primary research experts and then the necessary data were collected. During the interview, new people were identified, and a total of 19 people were interviewed and theoretical saturation was obtained. The theoretical saturation obtained in this study was achieved when the additional data did not help to complete and specify the dimensions of the research and the data collected after the fifteenth interview seemed similar. To ensure this, while providing a model to some members of the statistical community, the qualitative section of the feedback showed that the interviewees were confident in the theoretical explanation of the research and did not have any recommendations for conducting new interviews with a particular person or persons. The status of the sample of research experts shows that 57% of the sample of research experts have scientific and research background in universities and 21% of them also have executive experience in the Iranian Stock Exchange Organization in the subject under study. In addition to the above two categories, 22% of the sample of experts also have a long experience, investments and activities in the stock exchange, who have higher university education. The average work experience of academic experts and executive agents of the Iran Stock Exchange Organization is between 15 and 18 years and the work experience of investment experts is 14 years, which indicates a good experience followed by full familiarity with the dimensions of the financial accelerator. In order to increase the validity and reliability in the qualitative section, by providing feedback to the interviewees to increase the validity and by placing them in the course

of the research in a way that does not affect their response, the ground for increasing internal validity was provided. For this purpose, after each interview, the model obtained up to that stage was presented to the interviewees and the interviewees presented the points they had about the model. This was done after each interview so that the interview would be free of any assumptions and orientations. In addition, in order to increase the reliability of this section, while using structured processes from convergent interviews, an attempt was made to organize structured processes for recording, writing and interpreting the statistical data. It was also considered to use the guidelines of the research team to evaluate and performance interviews in order to increase the reliability of the research. In this study, the required categories were extracted from the heart of the interviews.

Findings

Given that the purpose of the present study is to describe the phenomenon of optimal financial acceleration in the most detailed way possible in the form of a native model, Therefore, a criterion called data saturation or theoretical saturation is used to determine the end point of the qualitative part, In other words, in this case, the new data entering the research does not change the existing information about the financial accelerator. Through more than 256 passages after coding the data obtained from the interview, 126 were coded and then the variables were extracted, some of which are presented as examples in Table One.

Table 1

Coding and extracting the concepts of optimal financial accelerator

| | | | | |
|-----------------|-----|--|--|--------------|
| | Row | Open coding | Extracted variable | |
| As be the | 1 | How to determination financial goals | financial policy | can seen, |
| | 2 | How the company pays | | |
| | 3 | Revenue management | | |
| | 4 | Full employment | Prosperity and recession of the company | |
| | 5 | the increase of the prices | | |
| | 6 | Expansion of credits | | |
| | 7 | Reduce company production | | |
| | 8 | Reduce investment in companies | | |
| | 9 | Goods and services produced | Company productivity | |
| | 10 | The measure of capital, energy, technology and manpower used in production | | |
| | 11 | The amount of income earned | | |
| | 12 | Proportion of production costs incurred | | |

obtained propositions are coded and in the same way 21 research variables are extracted according to Table 2.

Table 2

Extracted variables for financial accelerator optimization

| code | Variable title | code | Variable title |
|------|----------------------|------|---|
| 1 | Credit channels | 12 | Financial performance forecasting |
| 2 | Insurance costs | 13 | Stock pricing mechanism |
| 3 | Net valuable changes | 14 | Stock price fluctuations |
| 4 | Financing costs | 15 | Prosperity and recession of the company |

| | | | |
|----|--------------------------|----|-----------------------------|
| 5 | Investment costs | 16 | Company financial policies |
| 6 | Asymmetric information | 17 | Balance sheet effects |
| 7 | Financial friction | 18 | Financing mechanism |
| 8 | Risk rate | 19 | Financial efficiency |
| 9 | Short-term benefit rates | 20 | Financial expense situation |
| 10 | Financial resilience | 21 | Credit market limitation |
| 11 | Relative power index | | |

Now, using interpretive structural modeling (ISM) method and with the help of ISL MATLAB software, the levels and the effectiveness of the factors are evaluated and then the factors are examined in terms of dependence and guidance power by Mick Mac technique. In the first step, the structural self-interaction matrix of the research is formed using the opinion of the respondents who are research experts. To form the structural self-interaction matrix, the experts consider the criteria in pairs with each other, and based on the spectrum V: the factor of row i causes the factor of column j to be realized. A: The column factor j causes the row i factor to be realized. X: Both row and column factors cause each other to be realized (factors i and j have a two-way relationship) and O: There is no relationship between the row and column factor that responds to even comparisons. The self-interaction matrix is given in Table 3.

Table 3

Structural Self-Interaction Matrix (SSIM)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | |
|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|---|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 |
| 1 | | V | X | V | V | A | X | V | A | A | O | V | V | V | X | A | X | X | X | V | A | |
| 2 | | | X | V | V | O | V | V | A | A | O | O | V | A | V | A | A | X | V | V | A | |
| 3 | | | | A | V | V | X | A | A | A | V | A | A | A | A | V | A | V | V | A | | |
| 4 | | | | | V | A | X | A | V | V | V | O | A | V | A | A | V | A | V | V | A | |
| 5 | | | | | | A | A | A | A | V | V | O | V | V | A | A | V | A | V | V | V | |
| 6 | | | | | | | V | V | V | V | V | V | V | V | A | V | V | V | V | V | V | |

| | | | | | | | | | | | | | | | |
|----|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | | X | V | A | V | V | A | V | A | A | A | X | V | V | A |
| 8 | | | V | V | V | V | A | V | A | V | V | V | V | V | V |
| 9 | | | V | A | V | V | A | A | A | A | A | A | V | V | A |
| 10 | | | | | V | V | A | V | A | V | V | V | V | V | V |
| 11 | | | | | V | A | V | A | A | A | A | A | V | V | V |
| 12 | | | | | | | A | V | A | A | A | A | A | V | A |
| 13 | | | | | | | | V | A | V | A | V | V | V | A |
| 14 | | | | | | | | | A | V | V | V | V | V | V |
| 15 | | | | | | | | | | V | V | V | V | V | V |
| 16 | | | | | | | | | | | A | V | V | V | A |
| 17 | | | | | | | | | | | | V | V | V | O |
| 18 | | | | | | | | | | | | | V | V | A |
| 19 | | | | | | | | | | | | | | V | V |
| 20 | | | | | | | | | | | | | | | V |
| 21 | | | | | | | | | | | | | | | |

Then, according to Table 3, the initial achievement matrix is formed based on the numbers zero and one, and then the violation relations are created and the final achievement matrix is formed,

which is given in Table 4. All objects in this table are $\wedge^* 1$ have zero values in the initial matrix. Then, based on the fourth step, based on the fourth step, the set of achievement and prerequisites are extracted and the criteria are rated, which are given in Table 4.

Table 4

Final achievement matrix

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | u |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 1 | 1 | 1 | 1 | * | 1 | 1 | * | * | * | 1 | 1 | 1 | 1 | * | 1 | 1 | 1 | 1 | * | 2 |
| | | | | | | 1 | | | 1 | 1 | 1 | | | | 1 | | | | | | 1 | 1 |
| 2 | * | 1 | 1 | 1 | 1 | * | 1 | 1 | * | * | * | * | 1 | * | 1 | * | * | 1 | 1 | 1 | * | 2 |
| | 1 | | | | | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | 1 | 1 |
| 3 | 1 | 1 | 1 | * | 1 | 1 | 1 | * | * | * | 1 | * | * | * | * | * | 1 | * | 1 | 1 | * | 2 |
| | | | | 1 | | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 |
| 4 | * | * | 1 | 1 | 1 | * | 1 | * | 1 | 1 | 1 | * | * | 1 | 0 | * | 1 | * | 1 | 1 | * | 2 |
| | 1 | | | | | 1 | 1 | | | | 1 | 1 | | 1 | 1 | 1 | 1 | | | | 1 | 0 |
| 5 | * | * | * | * | 1 | 0 | * | * | * | 1 | 1 | * | 1 | 1 | 0 | * | 1 | * | 1 | 1 | 1 | 1 |
| | 1 | | | | | | | | | | 1 | | | | 1 | 1 | | | | | 9 | |
| 6 | 1 | * | * | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | * | 1 | 1 | 1 | 1 | 1 | 1 |
| | | | | 1 | 1 | | | | | | | | | | 1 | | | | | | | 2 |
| 7 | 1 | * | 1 | 1 | 1 | * | 1 | 1 | 1 | * | 1 | 1 | * | 1 | * | * | * | 1 | 1 | 1 | * | 2 |
| | | | | 1 | | 1 | | | 1 | | 1 | 1 | 1 | 1 | 1 | 1 | | | | | 1 | 1 |
| 8 | * | * | 1 | 1 | 1 | * | 1 | 1 | 1 | 1 | 1 | 1 | * | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| | 1 | | | | | | | | | | | | | | | | | | | | | 0 |
| | | | | | | 1 | | | | | | | 1 | | | | | | | | | |

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | Degree of dependence | |
|----------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----------------------|---|
| 19 | 1 | * | * | * | * | 0 | * | * | * | 0 | 0 | 1 | * | * | * | * | * | * | 1 | 1 | 1 | 1 | 1 |
| | | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | |
| 20 | * | * | * | * | 0 | 0 | * | 0 | * | 0 | 0 | * | * | 0 | 0 | * | 0 | * | 0 | 1 | 1 | 1 | 2 |
| | 1 | | | | | | | | | | | | | | | | | | | | | | |
| | | 1 | 1 | 1 | | | 1 | 1 | | | 1 | 1 | | | 1 | | 1 | | | | | | |
| 21 | 1 | 1 | 1 | 1 | * | * | 1 | * | 1 | * | * | 1 | 1 | * | * | 1 | * | 1 | * | * | 1 | 2 | 1 |
| | | | | | | 1 | 1 | | 1 | | 1 | 1 | | | 1 | 1 | | 1 | | 1 | 1 | | |
| Degree of dependence | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 |
| | 1 | 1 | 1 | 0 | 9 | 6 | 1 | 8 | 1 | 6 | 9 | 1 | 0 | 0 | 4 | 9 | 0 | 1 | 0 | 1 | 1 | 6 | |

Then, from the final achievement matrix, based on the fourth step, the achievement set and prerequisites are extracted and the criteria are rated, which is given in Table 5.

Table 5

Determining the levels of indicators

| Row | Exit | Entrance | Subscription | Level |
|-----|---|---|---|-------|
| 1 | 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21 | 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21 | 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21 | 1 |
| 2 | 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21 | 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21 | 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21 | 1 |
| 3 | 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21 | 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21 | 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21 | 1 |

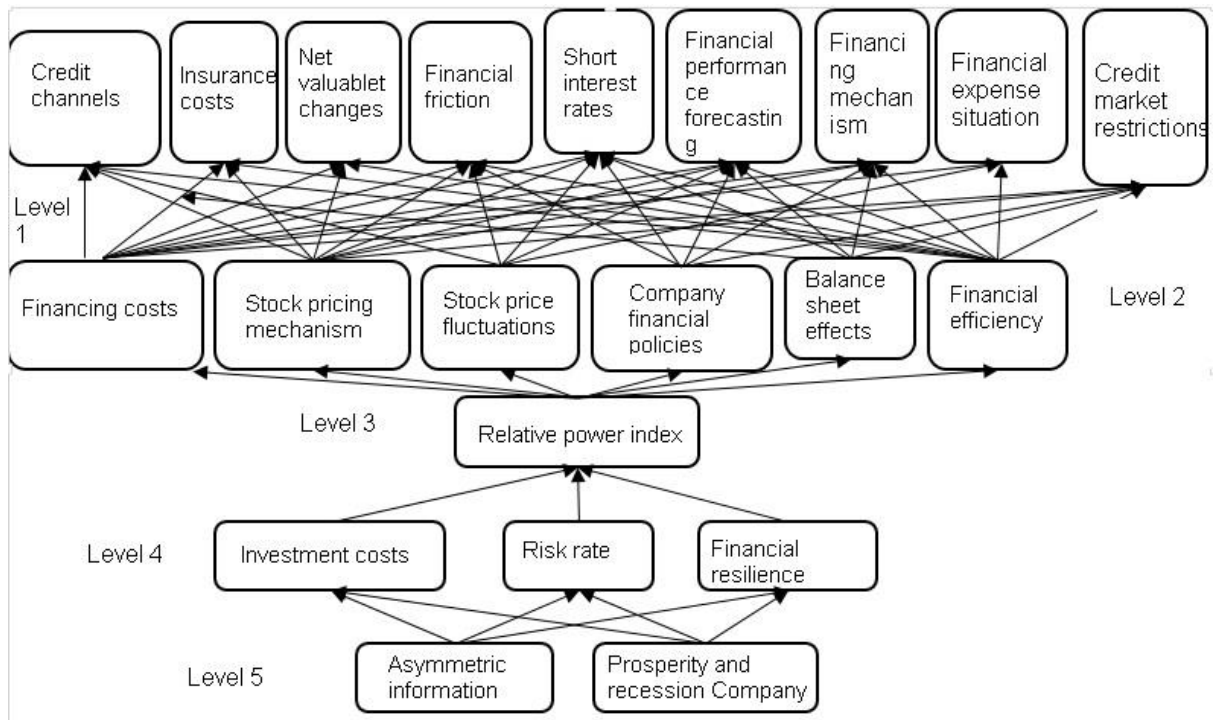
| Row | Exit | Entrance | Subscription | Level |
|-----|---|---|---|-------|
| 4 | 1-2-3-4-5-6-7-8-9-10-11-12-13-14-16-17-18-19-20-21 | 1-2-3-4-5-6-7-8-9-10-11-13-14-15-16-17-18-19-20-21 | 1-2-3-4-5-6-7-8-9-10-11-13-14-16-17-18-19-20-21 | 2 |
| 5 | 1-2-3-4-5-7-8-9-10-11-12-13-14-16-17-18-19-20-21 | 1-2-3-4-5-6-7-8-9-10-12-13-14-15-16-17-18-19-21 | 1-2-3-4-5-7-8-9-10-12-13-14-16-17-18-19-21 | 4 |
| 6 | 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21 | 1-2-3-4-6-7-8-9-10-12-13-14-15-16-18-21 | 1-2-3-4-6-7-8-9-10-12-13-14-15-16-18-21 | 5 |
| 7 | 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21 | 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21 | 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21 | 1 |
| 8 | 1-2-3-4-5-6-7-8-9-10-11-12-13-14-16-17-18-19-20-21 | 1-2-3-4-5-6-7-8-9-10-13-14-15-16-17-18-19-21 | 1-2-3-4-5-6-7-8-9-10-13-14-16-17-18-19-21 | 4 |
| 9 | 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-17-18-19-20-21 | 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21 | 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-17-18-19-20-21 | 1 |
| 10 | 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21 | 1-2-3-4-5-6-7-8-9-10-13-15-16-17-18-21 | 1-2-3-4-5-6-7-8-9-10-13-15-16-17-18-21 | 4 |
| 11 | 1-2-3-4-7-9-11-12-13-14-16-17-18-19-20-21 | 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-21 | 1-2-3-4-7-9-11-12-13-14-16-17-18-21 | 3 |
| 12 | 1-2-3-5-6-7-9-11-12-14-16-17-18-19-20-21 | 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21 | 1-2-3-5-6-7-9-11-12-14-16-17-18-19-20-21 | 1 |
| 13 | 1-2-3-4-5-6-7-8-9-10-11-12-13-14-16-17-18-19-20-21 | 1-2-3-4-5-6-7-8-9-10-11-13-14-15-16-17-18-19-20-21 | 1-2-3-4-5-6-7-8-9-10-11-13-14-16-17-18-19-20-21 | 2 |
| 14 | 1-2-3-4-5-6-7-8-9-11-12-13-14-15-16-17-18-19-20-21 | 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-21 | 1-2-3-4-5-6-7-8-9-11-12-13-14-15-16-17-18-19-21 | 2 |
| 15 | 1-2-3-4-5-6-7-8-9-10-11-12-13-14-15-16-17-18-19-20-21 | 1-2-3-6-7-9-10-14-15-16-17-18-19-21 | 1-2-3-6-7-9-10-14-15-16-17-18-19-21 | 5 |

| Row | Exit | Entrance | Subscription | Level |
|-----|---|---|---|-------|
| 16 | 1-2-3-4-5-6-7-8-9-10- 11-12-13-14-15-16- 17-18-19-20-21 | 1-2-3-4-5-6-7-8-10-11- 12-13-14-15-16-17-19- 20-21 | 1-2-3-4-5-6-7-8-10-11-12- 13-14-15-16-17-19-20-21 | 2 |
| 17 | 1-2-3-4-5-7-8-9-10- 11-12-13-14-15-16- 17-18-19-20-21 | 1-2-3-4-5-6-7-8-9-10-11- 12-13-14-15-16-17-18- 19-21 | 1-2-3-4-5-7-8-9-10-11-12- 13-14-15-16-17-18-19-21 | 2 |
| 18 | 1-2-3-4-5-6-7-8-9-10- 11-12-13-14-15-17- 18-19-20-21 | 1-2-3-4-5-6-7-8-9-10-11- 12-13-14-15-16-17-18- 19-20-21 | 1-2-3-4-5-6-7-8-9-10-11- 12-13-14-15-17-18-19-20- 21 | 1 |
| 19 | 1-2-3-4-5-7-8-9-12- 13-14-15-16-17-18- 19-20-21 | 1-2-3-4-5-6-7-8-9-10-11- 12-13-14-15-16-17-18- 19-21 | 1-2-3-4-5-7-8-9-12-13-14- 15-16-17-18-19-21 | 2 |
| 20 | 1-2-3-4-7-9-12-13-16- 18-20-21 | 1-2-3-4-5-6-7-8-9-10-11- 12-13-14-15-16-17-18- 19-20-21 | 1-2-3-4-7-9-12-13-16-18- 20-21 | 1 |
| 21 | 1-2-3-4-5-6-7-8-9-10- 11-12-13-14-15-16- 17-18-19-20-21 | 1-2-3-4-5-6-7-8-9-10-11- 12-13-14-15-16-17-18- 19-20-21 | 1-2-3-4-5-6-7-8-9-10-11- 12-13-14-15-16-17-18-19- 20-21 | 1 |

After determining the levels of each index and considering the final achievement matrix, an interpretive structural model is drawn. The final model is shown in Figure 1. This model consists of 5 levels. The first level is the most affected level and the fifth level is the most effective level.

Figure 1

Leveling model of research variables



Discuss and conclusion

The aim of this study was to provide a model for evaluating financial accelerators in companies listed on the Iranian Stock Exchange. Given the importance of the stock market and its role in advancing and developing the country, a proper evaluation of the performance of the financial accelerator can lead to the growth and profitability of these companies. The novelty of this research compared to other researches related to financial accelerator is that the model of this research has been obtained using qualitative-quantitative or combined research. Therefore, a research is not just qualitative or quantitative. In the modeling of this research, interpretive structural modeling has been used. Structural because the model has several levels and its levels are also known. It is an interpretation because it has been used by experts to judge. The fifth level of this model includes two variables of asymmetric information and the prosperity and recession the company and the most influential variables of this model. The importance of asymmetric information is such that it seems that if economic models ignore the problem of information asymmetry, they may cause a complete deviation in the market.

The prosperity and recession the companies is actually a period in which production and revenue increased, which is called prosperity, or the production and revenue of companies decreased, which is called recession. The life of a company during a prosperity or recession can greatly affect the performance of a financial accelerator. At the fourth level of this model, there are three variables: financial resilience, risk rate and investment costs. Financial resilience is a good capacity against financial shocks and adversity. Financial resilience is the financially developed ability to ameliorate or adjust the effect of negative shocks against something that may appear in the economy. High levels of financial resilience can improve and optimize the status of financial accelerators. In the meantime, risk is considered as a kind of uncertainty and knowledge about the outcome of an action. In the financial literature, risk can be defined as unexpected events that are usually in the form of changes in the value of assets or liabilities.

Firms are exposed to different types of risk. Risk level and how to manage risk are also significant and effective in the performance of the financial accelerator. The amount of return on investment and the amount of risk must be logically related. And the more acceptable the risk, the better the financial accelerators will perform. Investment expenditure is a variable that is mentioned in the performance of financial accelerators in this variable. Investment expenditure is a variable that is mentioned in the performance of financial accelerators in this variable. When companies invest in capital expenditures in the hope of improving future operations, they expect capital expenditures and allocate budget to these types of costs (upgrades or fixed assets such as factories, machinery, or other property). Another defining feature is the cost of lifetime capital; if the effect of costs is more profitable for the company for more than one fiscal year, they are capital costs. Some examples of non-physical items of capital expenditures are patents or assets whose value is depreciated over their useful lives, but there are exceptions in real industries and sectors. Capital costs can be used as collateral or foreign financing loans. Companies try to increase their capital expenditures by issuance of loan papers, loans or other debt instruments. Shareholders who receive dividends pay special attention to the amount of capital costs and are looking for companies that, while paying dividends, also seek to increase future dividends.

The relative power index is a variable in the third level of this research model. Relative power index is one of the technical tools in analyzing the technical conditions of the market that is used by many investors to have a better understanding of the environment and price trends. The Relative power Index (RSI) is a moving index that measures the amount of recent price changes to check the buy or sell saturation conditions at the price of a stock or other financial instrument. The relative power index is displayed as an oscillator. This index and its attention and status play an important role in evaluating the financial accelerator performance of companies listed on the stock exchange. The second level of this research model consists of important variables which are: financing costs, stock pricing mechanism, stock price fluctuations, company fiscal policies, balance sheet effects and financial efficiency. The amount of costs that listed companies incur in financing have a significant effect on the optimization of the financial accelerator. However, the mechanism used to price stocks is significant. How companies' stocks are priced on the stock exchange and the type of pricing mechanism can influence investors' decisions. This mechanism can affect the performance of financial accelerators in these companies. The amount and level of stock price fluctuations, which are also called fluctuations in the Tehran Stock Exchange today, is important to evaluate the performance of the financial accelerator. Many stock exchanges around the world use the allowable range of fluctuations due to the reduction of market fluctuations. The allowable range of fluctuations is the price ceiling and floor that each share can have in each trading day. The manner and quality of this range of fluctuation is important in the performance of the financial accelerator. Financial targeting, financial strategies, etc., which are collectively called the financial policies of companies, these financial policies ensure the improvement of the performance of financial accelerators. The effects of a company's balance sheet status and the quality of the balance sheet components and the effects that a company's balance sheet has on its performance as a balance sheet effect are also important factors in improving the performance of the financial accelerator. Basis of financial productivity; Financial efficiency, cost effectiveness, and rationality in determining the dimensions of public sector financial planning process staffs can also undoubtedly affect the evaluation of the performance of the financial accelerator. But at level one or the most influential level of this model, there are also variables that are: credit channels, insurance costs, net valuable changes, financial friction, short-term interest rates, financial performance forecast,

financing mechanism, financial cost status and credit market constraints. As the model of this research shows, at level one, all of these variables can improve the performance of the financial accelerator. What all listed companies should consider is taking financial accelerators seriously to making safety or minimize the consequences of financial and economic shocks and take steps to improve the performance of financial accelerators by relying on scientific and research studies. The model of this research can be a suitable model to improve the current situation of companies listed on the Iranian Stock Exchange, because this model has been indigenous and is more in proportion with Iran's financial and economic conditions.

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