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Identification of the Factors Affecting Capital Structure in Firms with Emphasis on the Role of Behavioral Factors

Ehsan Ahmadi*

*Corresponding Author, Ph.D. Candidate in Financial Engineering, Faculty of Industrial and Systems Engineering Tarbiat Modares University, Tehran, Iran. (Email: ahmadi.ehsan@modares.ac.ir)

Parastoo Mohammadi

Assistant Prof., Department of Economics, Faculty of Industrial and Systems Engineering, Tarbiat Modares University, Tehran, Iran. (Email: p.mohammadi@modares.ac.ir)

Farimah Mokhatab Rafei

Associate Prof., Department of Finance, Faculty of Industrial and Systems Engineering, Tarbiat Modares University. Tehran, Iran. (Email: f.mokhatab@modares.ac.ir)

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Abstract

Making decisions regarding capital structure is among the most challenging issues ahead for firms and the most critical decisions for their survival. On the other hand, several significant aspects, such as behavioral factors, have been overlooked in this field. Thus, the present study mainly seeks to identify the factors affecting capital structure in Iranian firms, emphasizing the role of behavioral factors. The present study employs mixed qualitative and quantitative research methods. From the qualitative point of view, capital market experts were inquired, and theoretical saturation was achieved using the snowball method. After the interviews, research components were extracted through coding. The opinions of a group of experts and managers of firms listed on the Tehran Stock Exchange were used in the quantitative section, and a structural equation form was used to perform confirmatory factor analysis on the research model. A total of 63 concepts in the form of six categories were identified at the first stage, which was reduced to 58 in the form of six categories and was confirmed after the concepts were sent back to the experts. The principal components included behavioral factors, macroeconomic factors, political factors, socio-cultural factors, firm features, and corporate governance. Results were validated through factor analysis in the quantitative portion of the study. The present study can be considered among the comprehensive studies at the construct level with an integrated approach to firms' capital structure. The emergence of behavioral finance resulted from understanding the importance of measuring human behavior as a factor with transcendent consequences for financial decisions. Hence, most behavioral finance studies are focused on observable behaviors. However, the item response theory presents an integrated method for disciplines that work with cognitive variables. Accepting opportunities for new knowledge is essential for firm decisions to respond to the mental views of financial managers.

The present study sought to identify the factors influencing firms' capital structure in Iran. The tool used in the present study reflected the elements making up the capital structure. In this regard, the notable point is how the classic criterion of structural capital components can explain financial managers' perception of decision-making. The research results in this area are interesting since we have confirmed a capital structure theory at the construct level. The conformity of the results and the obtained reliability levels indicate that this theory fits the given dimensions well. Moreover, relevant evidence indicates that senior financial managers adopt various states considering internal and external factors at the structural level, which can cause cognitive bias in decision-making.

Keywords: Wisdom of Crowd, Stock Price Prediction, Long Short-Term Memory, LSTM

Introduction

Capital structure has widely been studied from the traditional financial viewpoint of firms. From this point of view, firms finance their operations with a combination of equity and liability, setting the structure composition and net liabilities. These studies are exclusively concerned with the relationship between this structure and firm value and focus on the accounting components that maximize stock price. Researchers have found over the years that factors such as taxes, agency costs, and information asymmetry impact firm value. This has led to multiple changes in the finance theory, such as the fact that the firm can accomplish its desired capital structure provided it minimizes its Weighted Average Cost of Capital (WACC). This means that firm funds can be divided into the budget provided by its partners and the funds it obtains from third parties (Rayes et al., 2019). The first and most appropriate definition of the term capital structure was proposed by Modigliani and Miller (1958). As stated by many researchers, a Firm capital structure is a specific combination of long-term equities and liabilities used by a firm for its financial operations. Financial managers determine the right balance between capital and liabilities while seeking the smallest financial resources for trade. A Company Finance Operation (CFO)'s most significant challenge is creating and managing shareholder value (Modigliani & Miller, 1958). Modigliani and Miller (1963) suggested that firm value increases in proportion to its leverage to the deduction of tax profits before the taxes, so its value would almost wholly be maximized through securing liabilities. They also inferred that an optimal capital structure would maximize stock price and can minimize the weighted average cost of capital (Modigliani & Miller, 1958).

There are various approaches to making up the capital structure theory. However, they still need to gain dominance in practice. An abundance of contradictory empirical observations keeps raising questions on the validity of each approach so that researchers are deeply submerged in the fundamental factors determining capital structure in practice. Rather than analyzing numbers to solve the financial issue, researchers have been more focused on understanding the sources of financial decision-making –i.e., the human factor over the recent years. This specific analysis has led researchers to believe that financial behavior depends on the various presumptions of the concepts that were thought to be assumptions made by the neoclassic financial theories. Specifically, there is widespread doubt that there is an assumption of rationality in the realistic practical decision-making procedure. This is exactly where the financial behavior of firms emerges. These assumptions replace the traditional rationality assumptions with more rational behavioral assumptions regarding

various financial decisions.

Moreover, the validity of the neoclassic theory is seriously threatened by the various results and conclusions obtained from the so-called qualitative methodology, which makes more facility for other financial behavior theories, such as the post-Keynesian approach to explaining how decisions are made, and financial behavior is formed (Vasiliou & Daskalakis, 2009). The Efficient Market Hypothesis (EFH), the foundation of the conventional economic theory, is based on rational hypotheses regarding an efficient market and maximizing profits (Fama, 1970). Still, EMH is generally incapable of explaining the chaotic phenomena in financial markets. Behavioral financial hypothesis reasons that complete and complex mathematical models are inadequate in explaining the current financial model, and social behavior needs to be accounted for to explain the abnormalities in the market. In this regard, Thaler (1999) brought about a turning point in economic research and presented empirical evidence on the direct relationship between human behavior bias and financial decision-making (Thaler, 1999). Shyam-Sunder and Myers (1999) asserted that the pecking order theory better explains the firm's behavior than the Traditional Tradeoff Theory. His results suggest greater confidence in the pecking order than in the target adjustment model. If companies have a well-defined optimal capital structure, managers are not interested in getting there. Bianchi et al. (2015) demonstrated that the behavioral approach is increasingly integrated into traditional financial research (e.g., EMH). Adopting a behavioral approach would make decision-making in the corporate economic sphere under the influence of human beliefs understandable (Bianchi et al., 2015). Moreover, these decisions regarding capital structure encompass variables affected by subconscious actions. Studying these variables from a cognitive structure point of view would provide the opportunity to understand the intervention of new variables in capital structure evaluation (Rayes et al., 2019).

Psychology and finance are two fields of science that have broken each other's boundaries over the recent decades and overlapped in many areas. One of these cases occurs in management decision-making, where managers' feelings and personal judgments influence their decisions, and phenomena similar to what we observed in the micro-behavioral-financial literature occur. Individuals' emotional states and professional and personal features leave particular impacts on their decisions and results, which will differ from the results of rational decision-making. Several psychological and behavioral factors called behavioral biases can lead managers to affect the risks of the business unit (Duellman et al., 2015). Attention to the behavioral-financial

aspect is increasing due to the tendency toward the behavioral and psychological spheres. A series of financial riddles that have occupied the minds of scholars and are increasing in number is the reason for this increased attention. Financial exceptions or empirical riddles suggesting market deviations from rational rules in contrast with the efficient market theory cannot be explained by the CAPM model. Some factors, such as preferences or feelings, also influence prince markets. The behavioral financial approach or school, which has emerged from integrating financial and psychological sciences, suggests that psychology plays a part in financial decision-making. Cognitive errors and deviations influence financial options due to their effects on financial decision-making. The relationship between finance and other social science disciplines, which goes by the name of financial psychology, has led researchers to perform abundant research on the behaviors of investors in financial markets and their reactions under various circumstances. The foundation and core of financial theory is the study of the behaviors of factors in allocating and arranging resources in terms of time and location. Time and uncertainty are key factors influencing financial behavior in an uncertain environment. As observed, behavior is the principal factor in Merton's definition: "behavioral factors" and "financial behavior" (Frankfurter & McGoun, 2002). Behavioral finance combines classic and financial economies and seeks to explain the abnormal phenomena observed in finance. Behavioral finance has been among the most financial dialogues over the two recent decades and is gaining increasing attention from economists and financial researchers. More financial scholars have admitted over recent years that the investors' expectations of the market are not completely rational (Hirshleifer, 2001).

Also, the traditional financial economy model assumes that decision-makers act rationally and consistently seek to maximize the desired desirability. However, new evidence such as Poutziouris, Markou, and Glyptis (2022) shows an integrated understanding of capital structure patterns at the nexus of internal (firm-specific) and external environment determinants. In other words, the two main pillars of the traditional financial paradigm are the factors' complete rationality and decision-making based on desirability maximization. In contrast, behavioral finance suggests that some financial phenomena can be understood using models in which some financial factors are not entirely rational. In some behavioral financial models, the factors have completely accurate beliefs, and the reason for such beliefs is generally mistakes in applying the Bayesian law (Frankfurter & McGoun, 1996).

Based on Seghiescu Vaidean's (2014) model, a firm's capital structure is

negatively influenced by its profitability and assets' liquidity. Moreover, they confirm the results of previous empirical studies, which have shown that, for developing countries, the tangibility of a company's assets is negatively correlated with its debt ratio, given that a high level of tangible fixed assets does not represent a guarantee for creditors in case of default of the borrower company. On the other hand, the size of the company and its asset turnover are explanatory variables positively correlated with the level of debt. The empirical results support the pecking order theory, in which a profitable enterprise with a high level of liquidity will have a reduced level of debt.

Theories of capital structure and capital and liability leverage selection theories to finance firms were proposed in the 1950s, and the aspects of corporate governance impact on the decision-making of managers and boards gained more attention over the recent years. At the corporate governance level, capital structure is examined in the form of the impact of gender diversity on corporate governance and the influence of other areas, such as the influence of board members, the number of members, interactions, and shares ownership centralization on capital structure have yet to be closely examined. On the one hand, private and public sector ownership in firm boards and how they influence firm capital structure can be an interesting research subject due to the widespread public structure of the Iranian economy. On the other hand, behavioral finance analysts strongly question the conventional economic theory in which human reasoning and emotional-cognitive biases are not accounted for. Previous research has merely addressed behavioral errors and the emotions and feelings of investors when making investment decisions as far as behavioral biases are concerned. However, it would be essential to determine whether the perceptions and feelings of managers influence their decisions. Do they suffer behavioral bias and mental and judgmental errors when making decisions? For instance, do individuals' personal judgments, feelings, and personality traits influence their behaviors and decisions? Given the rising interest in the study of psychological biases in financial behavior and the little information regarding the interventions in firms' decision-making regarding capital structure, the present study seeks to identify the behavioral factors affecting capital structure.

Many researchers have challenged the contrast between the traditional tradeoff theory and the pecking order theory. Traditional Tradeoff and Pecking order theories are the most acceptable capital structure theories. According to the Traditional Tradeoff theory, firms have one optimal debt ratio (target leverage). The stock price increases with the debt issuing announcement and falls after the equity issuing announcement. Agency models predict that

leverage is positively related to the firm value, default probability, free cash flow, extent of regulation, liquidity value, interest coverage, cost of investigation of the firm's prospects, and the probability of reorganization upon default.

On the other hand, leverage has an inverse relationship with growth opportunities and the importance of managerial reputation. Kim and Sorenson supported that leverage is directly related to the amount of managerial equity ownership. In contrast, Friend and Lang found no correlation between leverage and the amount of managerial equity ownership (Hashemi et al., 2014).

Literature Review

Financial sciences are among the fields that develop based on the community's needs and expand daily to new boundaries. In this regard, behavioral finance results from interactions between financial and behavioral sciences and has been embraced by scholars in both these fields. Behavioral financial knowledge has presented a new approach in the framework of the behavioral economy, based on which researchers are conducting studies. Recent studies and evidence indicate that behavioral financial factors play an undeniable part in explaining market behaviors and the behavior of economic actors. On the other hand, maximization of the firm value entails implementing profitable plans that require funding. The available strategies to supply the capital costs influence firms' capital structure. Selecting the type of funding, such as releasing new shares, issuing bonds, or getting loans, also influences the overall firm value. To optimize firms' capital structure, understanding various financial sources and costs imposed by them for funding is essential for financial managers of firms to make financing decisions to maximize firm value.

Financing to implement the firm's plans or modify its financial structure can be supplied from equities or liabilities. Excessive use of equities will increase the shareholders' expected returns and the firm's financing costs. On the other hand, short-term or long-term excessive use of liabilities can exacerbate the firm's financial risk and reduce its financial flexibility. Not only does deciding about a firm's capital structure make up the firm's character, but it also leaves a significant impact on the performance of firm managers. Financial managers must examine various financing methods considering firm returns and risks to assess the influence of various financial structures on the wealth of the shareholders (Frank & Goyal, 2003).

Various theories have been proposed around the capital structure, including:

The pecking order theory

The pecking order theory can be traced back to the thoughts of Myers (1984). He was influenced by the beliefs Donaldson (1961) presented in his book. Myers (1984) argues that according to the adverse selection theory, financing from accumulated profits would be more desirable than the burrowing method, which is, in turn, more desirable than financing through issuing equity. The hierarchy has been proposed based on Myers and Majluf's (1984) adverse selection method. Myers and Majluf assume a perfect market like Modigliani and Miller. Managers will not issue new undervalued shares if they act in shareholders' favor. In equilibrium, the firm issues new stock only at a market-down price. Managers will issue new equity shares with the hope of getting offset by NPV of growth opportunity or new investment opportunity. This leads to a drop in share price. Hence, this is terrible news for assets in place. The issue becomes worse as the information asymmetry increases. For investing, firms with more growth opportunities are better than matured firms because the price falling is affected by growth opportunity value versus assets in place. Debt has the prior claim over equity, and debt issuers are less exposed to information asymmetry (Hashemi et al., 2014).

Market Timing

Baker and Wurgler (2002) explained the timing theory as follows: "Capital structure forms as a result of the accumulation of the past efforts to schedule the securities market." This model assumes that firms issue equity after experiencing an abnormal and significant increase in equity prices. Moreover, managers try to schedule stock markets based on private information regarding the future value of the firm and schedule liability markets based on general information. If managers lack more general information than the investors when scheduling the liability market, the scheduling strategy will fail to create value. Moreover, firm directors may also schedule liability markets based on private information on the future credit rating of the firm. Firm managers may have better information on the future changes in firm credit rating compared to the investors. In this case, managers issue short-term debt securities if they expect the firm's credit rating to improve over future periods and issue long-term debt securities otherwise. The principal result of the market timing theory is that improper pricing of the debt tools and equities when the firm needs financing is the primary factor determining the firm's capital structure (Baker & Wurgler, 2002).

Static tradeoff theory

The original version of the stable tradeoff theory rose from the discussion between scholars following Modigliani and Miller's (1958) theory (Modigliani & Miller, 1958). After the issue of corporate income tax was added to their original model (Modigliani & Miller, 1958), Kraus and Litzenberger (1973) presented a definition of the tradeoff theory. They stated that an optimal capital structure implies a balance between the tax benefits resulting from the debts and bankruptcy costs (Kraus & Litzenberger, 1973). Myers (1984) believed that firms that use the static tradeoff theory regulate a ratio for their target liabilities and set the firm to move towards it. He believed this ratio was determined by balancing the tax benefits resulting from the debts and bankruptcy costs (Myers, 1984).

Agency costs theory

Jensen and Meckling (1976) were the first to propose the agency costs theory, suggesting that the optimal capital structure was determined through agency costs, which include debt and equity issuance. Given the convergence between managers' decisions and shareholders' decisions, Jensen and Meckling (1976) stated that the equity agency costs result from the separation of firm control and ownership, so managers are unable to capture non-operating profits from their activities aimed at increasing the operating profits and thus tend to maximize their benefits (utilities) rather than increasing firm value. Therefore, managers cannot capture non-operating profits from activities they have done to increase operating profits. Therefore, managers tend to maximize their benefits (utility) instead of increasing the value of the company (Jensen & Meckling, 1976).

Free cash flow hypothesis

The free cash flow hypothesis proposed by Michael Jensen in 1986 is among the other hypotheses that explain the capital structure and has good research support. This hypothesis brings about essential reflections on the capital structure. The hypothesis suggests that paying dividends to the shareholders decreases the firm's free cash flow. Increasing the paid dividends is thus expected to increase shareholders' benefits by reducing the ability of the managers to pursue activities or goals that contradict the benefits of the shareholders. Furthermore, the impact of debts would be more significant than paying dividends in preventing the personal goals of the managers from being pursued, given that interest and debt are among the fixed liabilities of the firm and have to be paid on time. This is because the firm would face the risk of

bankruptcy if it does not fulfill its commitment on time, whereas reduced or lack of paying the dividends would create less of a problem for managers since the firm has more freedom in paying dividends to the shareholders. Therefore, the free cash flow hypothesis suggests that shifting from issuing equity to debts for financing will increase firm value since it undermines managers' chances to waste firm resources (Jensen, 1986).

Capital structure legal environment theory

Legal environments lead to various financial decisions for firms. La Porta et al. (1998) discussed the legal factors affecting the capital structure and analyzed the factors determining foreign financing. They concluded that countries with less-supported investments have weaker and smaller markets, which impacts the capital structure. The costs of foreign financing will also be influenced if the capital market is weak and small, and firms may have to rely on financing through domestic resources (La Porta et al., 1998). La Porta et al. (1999) demonstrated that the value of firms is higher in countries where investors have more support, which can influence the selection of the type of financing as well (La Porta et al., 1999).

Sharpe and Zyblock (1997) investigated the macroeconomic factors affecting the financial leverage of Canadian and American firms over a period. They found that the amount of leverage used had increased by about 50%, and the most critical factor in the increased leverage was the increased use of short-term debts. Although the amount of the increase in using leverage was the same in the two countries, they varied in terms of the period in which the use of leverage increased. This period was one where the real interest rates were low, and firm capital was vastly growing. Meanwhile, most of the increase in financial leverage in the USA dates back to 1982-1990, when American firms faced the process of capital restructuring through the purchase of equity securities by burrowing (Sharpe & Zyblock, 1997).

Various studies have investigated the role of behavioral factors in capital structure. Liu et al. (2022) found that Chinese firms with financial limitations went through a significant increase in their leverage compared to non-limited firms after implementing the ownership rights law in China in 2007. Their results revealed three alternative measures of financial constraint: asset tangibility, ownership structure, and firm size. This finding is consistent with the financial constraint hypothesis, which suggests that lenders are willing to provide more credits to constrained firms, given that the law reinforces the creditors' rights (Liu et al., 2022). Aibar-Guzmán et al. (2022) found that ownership by mutual holdings contributes to sustainable product innovation

projects, and there is a greater preference for the use of debt financing over automatic financing to fund them (Aibar-Guzmán et al., 2022). Çam & Özer (2022) found that firms operating in countries with stronger governance reduce their leverage while increasing their debt maturity. They specifically demonstrated that these firms reduced their reliance on short-term debt issuance while increasing their reliance on issuing stocks and long-term debt to finance their capital costs (Çam & Özer, 2022). Chua et al. (2022) demonstrated that the target leverage model increased the pace of adjustment toward the target leverage by 22% by incorporating CEO features. Secondly, results indicated that improving the experience and education of the CEO with a standard deviation increased adjustment speed by 0.17% and 3.37%, respectively. Therefore, the results were consistent with the theory that manager experience and education were potential determining factors of dynamic capital structure (Chua et al., 2022).

Xia et al. (2021) indicated that when a firm is in a high social trust area (personal or public trust), it adjusts to its target capital structure more quickly than expected. Besides, their results indicated that the influence of generalized (personal) trust on the adjustment speed would be magnified if the firm had previously experienced financial constraints (less severe agency problems). However, the severity of those constraints did not influence the effect, as mentioned earlier. Further analysis indicated that social trust influenced capital structure dynamicity mainly through debts rather than equity (Xia et al., 2021). Chauhan et al. (2021) found that social trust had a converse relationship with the leverage ratio. They also observed that social trust could replace official institutions and thus has a weaker influence on firms established in countries with stronger legal institutions (Chauhan et al., 2021).

Yang et al. (2021) found that excess debt costs got more serious due to ethical management risks. Such costs make up even over half of the total agency costs at a high level of cash flow. Moreover, their model predicted a U-shaped relationship between a firm's leverage ratio and investment opportunities, which stems from the ethical risk of the managers (Yang et al., 2021). Danso et al. (2021) found that the previous capital structure theories could be confirmed in Japan, and the necessary conclusions could be made accordingly. In other words, despite the particular features of the firms based in Japan, capital structure theories could also be confirmed in this country. Financial crises influenced the leverage used by the firm significantly. Researchers investigated the impact of the 2007-2008 financial crisis on the capital structure of Japanese firms in this regard. The amount and severity of the competition in the market influenced firms' leverage (Danso et al., 2021).

Mogha and Williams found that the national culture of firms influenced their selection of short-term and long-term debts compared to the book value and capital market. The impact on short-term capital structures was more than on long-term structures. Moreover, the market value of equities was more important in short-term debts, while the book value of equities was more important in long-term debts (Mogha & Williams, 2021).

Rashid et al. (2020) found that firms consider the asset structure and growth opportunities when increasing debt capital. On the other hand, Shariah-compliant firms preferred countries with a. higher power distance scores, b. higher individualism levels, c. higher masculinity scores, and d. lower degrees of uncertainty aversion when tested in terms of cultural aspects (Rashid et al., 2020). Singh and Kannadhasan (2020) found that the relationship between leverage and corruption was significant and positive, except in the tenth quadrant, where the impacts were stronger in higher quadrants. Results suggest that firms prefer debt financing to protect asset ownership (Singh & Kannadhasan, 2020). Choi et al. (2020) found that the debt level of enterprises would be low if the share of institutional investment were higher. In other words, researchers found that supervision from the institutional investor would eventually result in lower debts.

Researchers also discovered that institutional investor ownership would be high if its debt levels were high since these investors reduce their supervision costs. These researchers eventually found that the amount of institutional investors' ownership influenced firms' capital structure over the long term (Choi et al., 2020). Xing (2020) found that behavioral financial factors are observed in developed and emerging financial markets. This paper was concerned with how behavioral biases influence personal investment decisions and firms' capital structure. This paper mentioned the role of high self-confidence multiple times, which leads individual investors to overestimate their abilities. Several studies suggested that investors always use previously winning stocks in emerging markets, which is considered a bias in behavioral financial affairs. The firm's capital structure will be influenced if the CEO and managers have a behavioral bias when making critical decisions. Moreover, the behavioral bias of the CEO will deviate from merger and acquisition assessments. More researchers are studying behavioral finance in emerging markets and considering the role of cultural differences in behavioral bias. Behavioral finance is still among the interesting areas to explore (Xing, 2020). Reyes et al. (2019) found that financial behavior can be studied as a cognitive structure. Thus, a multidimensional "financial-cognitive" structure can be created using specific variables. Their model explained how decision-makers

reacted in the face of environmental conditions and uncertainty and found that they directly impacted the loss of revenue assessment of the firm (Reyes et al., 2019).

Jurevičienė et al. (2014) found that behavioral financial affairs are significant at both corporate and individual levels. Various studies have focused on analyzing the behavior of large corporations over recent years. However, these eventually solve debt or capital problems, finding the best resource to increase capital or the cheapest liability options. Results suggested that non-financial Lithuanian firms did not have much activity in financial markets and would choose to make short-term investments with lower risk (and less profitability). They keep a considerable amount in time deposits or cash and try to collect financial capital for the implementation of various projects concerning the core activities of their firms (Jurevičienė et al., 2014).

Most of the studies conducted in this regard were performed after the research of Miller and Modigliani. They stated that managers would not be able to change firm value merely through altering the composition of financing resources in the face of specific assumptions such as complete market competitiveness, lack of income tax, lack of bankruptcy costs, lack of agency costs, presence of information asymmetry among capital market players, and substitution of domestic financing resourcing with foreign resources. This theory was modified a few years later to incorporate tax consequences.

Other approaches, such as the conventional theory, net operating profit, net profit, preferential theory, equilibrium theory, agency costs theory, and market timing theory, have also been presented, some of which were mentioned earlier. International studies have investigated macroeconomic conditions and capital structure or the impacts of various countries' needs on capital structure over the recent years. However, they have yet to present an optimal capital structure for firms. A general review of the studies conducted so far indicated that the theories on a capital structure considered specific factors to be involved in choosing the debt ratio suiting the favorable capital structure; however, no unified theory and idea has been presented to respond to the question of optimal capital structure so far.

According to the explanations provided, in this research, it was decided to investigate the effect of cognitive profiteering on the choice of capital structure in behavioral finance.

Research Methodology

The present study used an exploratory sequential mixed method to achieve the benefits of both qualitative and quantitative since the two methods are used alongside one another. Exploratory mixed research designs seek to find grounds for unspecific situations. For this purpose, qualitative data were first collected through questionnaires. This initial identification provided the chance to formulate hypotheses regarding the studied phenomenon. Afterward, the researcher tested the hypotheses by collecting quantitative data from research opinions. Qualitative data are awarded more importance in this type of mixed research design.

Moreover, the qualitative data are collected first, and quantitative data collection follows afterward in the data collection sequence. The researcher collects quantitative based on the results of qualitative data to make the results generalizable through further revision. Since qualitative and quantitative methods complement one another, using both methods in the mixed method brings about a deeper understanding of the research subject. The present study conducted a qualitative analysis using a data-driven method after interviewing 28 experts. The initial model was designed, and research hypotheses were formulated and delivered to experts and managers through questionnaires for testing and generalizability.

The participants in the qualitative portion of the study included firm managers and faculty members of Tehran universities with a background in the research subject. A total of 28 experts participated in this section. Several talent management experts were selected based on the purposive sampling approach. They went through semi-structured interviews considering the data saturation principle to design the model at the qualitative stage. Using this method of interview, the same questions whose sequence and phrasing were determined based on theoretical foundations were asked of the participants.

Further questions were asked when necessary, depending on the atmosphere and conditions of the interviews, so that the interviewees provided the researchers with more and deeper information. Simple randomized sampling was performed in the quantitative portion of the study so that all the members of the statistic population containing firm managers had the same chance of being selected as a sample. The statistical population of this research was approximately 380 companies on the Tehran Stock Exchange, and based on Morgan's table and in proportion to the statistical population size, the sample size was estimated to be around 181 companies. Therefore,

Questionnaires were sent to 220 people. In the end, among the whole sample, 160 people agreed to participate in the study and completed the questionnaires, so the results of this study are reliable at the error level of 6%. As the principal criteria of the study were determined, inferential statistics and structural equations were used in the quantitative stage to conduct factor analysis on the qualitative section of the study. Smart-PLS statistical software was used at this stage of the study to perform the statistical analyses.

Results

The present study was conducted in two stages. In the first (qualitative) stage, research components and models were extracted based on expert opinions. In the second (quantitative) stage, the components extracted in the first stage underwent confirmatory factor analysis based on the opinions of capital market experts and players.

The qualitative section

Snowball[1] Chain sampling was used to identify and select panel members. Snowball sampling entails identifying an initial number of subgroup members from whom the desired data are gathered and who then serve as 'seeds,' or study staff recruited respondents, to help identify other subgroup members (i.e., individuals who engage in the same types of behaviors) to be included in the sample. Two experts were identified at the beginning of the study. They were then asked to introduce the other experts and professionals they knew to have a command over the research area, which led to the development of a list of 40 experts who were experienced in the research subject. At the next stage, a form containing the research subject, research goals, duration, and approximate rounds of the study was designed and handed out to the 40 identified experts to announce whether they were willing to participate in the panel. A total of 32 experts expressed their willingness to participate. The opinions of 28 experts were eventually applied to the research model due to the theoretical saturation of the concepts.

After referring to the experts and conducting interviews, the codes from the interview transcripts were extracted as components and sub-components. Table 2 demonstrates that the main components of the study were extracted at the first stage.

[1] Snowball sampling: A strategy in which existing participants recruit future participants from others they know. Strategy is often used for hard-to-recruit populations(Berndt,2020).

Table 1. Main research components

No.	Main component	Sub-component
1	behavioral factors	Overconfidence
		Management abilities
		Manager experiences
		Managers' gender
		CEO education
		Perception of the macroeconomic environment
		Imitating other superior managers in the industry
		Manager personality type
		Over-optimism
		Management tenure
		Financial knowledge
		Openness to advice
		Business intelligence
		Flexibility in decision-making
		Conservatism
		Individualism versus collectivism
		Short-sightedness
		Perceptual errors
2	Macroeconomic factors	Business periods
		Economic growth
		Information rent
		Tax rates
		Interest rate
		Economic sanctions
		Exchange rate changes
		Inflation rate changes
		Financial and monetary policy uncertainty
3	Socio-cultural factors	Sharia-compliant finance
		Organizational culture
		Religious orientation
		Social trust
4	Political factors	Quality of governance
		President elections
		Non-economic sanctions
		Administrative corruption
		Political stability
		Rule of law
		Setting new regulations
5	Firm features	Human capital
		Tangible assets
		Profitability
		Market to book value
		Sales growth

		Dividends
		Non-debt tax shield
		Firm size
		Operational risk
		Current liabilities
		Research and development costs
		Return on assets
		Firm age
		Auditing quality
		Financial leverage
		Systematic risk
		Liquidity
6	Corporate governance	Managerial ownership
		Institutional ownership
		Corporate leadership quality
		Ownership centralization
		Decentralized ownership
		Institutional supervision
		CEO power
		CEO task duality
		Board composition

The components were sent to the experts after being designed, as shown in Table 1. At this stage, the experts were asked to score their level of agreement with the proposed components on a scale of one to five, corresponding to the options of "completely disagree" to "completely agree."The criterion for eliminating a component was a score lower than 3. As Table 2 indicates, the components of openness to advice, individualism versus collectivism, political stability, research and development costs, and dividends were removed from the model. The final model thus included six main components and 58 sub-components.

Table 2. Main research components in the first round

No.	Main component	Sub-component	Average score	Status
1	Behavioral factors	Overconfidence	4.4	accepted
		Management abilities	4.3	accepted
		Manager experiences	4.2	accepted
		Managers' gender	3.9	accepted
		CEO education	4.2	accepted
		Perception of the macroeconomic environment	4.1	accepted
		Imitating other superior managers in the industry	4.1	accepted
		Manager personality type	4.3	accepted

		Over-optimism	4.2	accepted
		Management tenure	3.9	accepted
		Financial knowledge	4.3	accepted
		Openness to advice	2.7	rejected
		Business intelligence	3.7	accepted
		Flexibility in decision-making	3.9	accepted
		Conservatism	4	accepted
		Individualism versus collectivism	2.9	rejected
		Short-sightedness	3.9	accepted
		Perceptual errors	4.2	accepted
2	Macroeconomic factors	Business periods	4.1	accepted
		Economic growth	4.2	accepted
		Information rent	4.3	accepted
		Tax rates	4.4	accepted
		Interest rate	4.4	accepted
		Economic sanctions	4.5	accepted
		Exchange rate changes	4.4	accepted
		Inflation rate changes	4.3	accepted
		Financial and monetary policy uncertainty	4.2	accepted
3	Socio-cultural factors	Sharia-compliant finance	4.3	accepted
		Organizational culture	3.6	accepted
		Religious orientation	3.8	accepted
		Social trust	3.9	accepted
4	Political factors	Quality of governance	4.1	accepted
		President elections	3.6	accepted
		Non-economic sanctions	4.1	accepted
		Administrative corruption	4.2	accepted
		Political stability	2.8	rejected
		Rule of law	3.6	accepted
		Setting new regulations	3.9	accepted
5	Firm features	Human capital	3.9	accepted
		Tangible assets	4.1	accepted
		Profitability	4.1	accepted
		Market to book value	4	accepted
		Sales growth	2.7	rejected
		Dividends	3.6	accepted
		Non-debt tax shield	4.1	accepted
		Firm size	3.5	accepted
		Operational risk	4.1	accepted
		Current liabilities	2.7	rejected
		Research and development costs	4.1	accepted
		Return on assets	3.6	accepted
		Firm age	3.8	accepted
		Auditing quality	4.1	accepted
		Financial leverage	3.8	accepted
		Systematic risk	3.9	accepted

6	Corporate governance	Liquidity	3.9	accepted
		Managerial ownership	4.1	accepted
		Institutional ownership	3.9	accepted
		Corporate leadership quality	4.1	accepted
		Ownership centralization	3.8	accepted
		Decentralized ownership	3.9	accepted
		Institutional supervision	4.1	accepted
		CEO power	4.2	accepted
		CEO task duality	4.3	accepted

The quantitative section

In this section, the model extracted from the qualitative section of the study was delivered to the experts and players of the capital market in the form of a questionnaire scored on a five-point Likert scale. This stage used structural equations to provide a final confirmation for the model extracted in the qualitative portion of the study. Contrary to the covariance-oriented method, structural equation modeling using partial least squares (PLS-SEM) lacks model fitness indices based on chi-square to investigate the level of the theoretical model's compliance with the collected data.

In principle, multiple linear regression can be used with many factors. However, suppose the number of factors gets too large (for example, more significant than the number of observations). In that case, we will likely get a model that fits the sampled data perfectly, but that will fail to predict new data well. This phenomenon is called over-fitting. In such cases, although there are many manifest factors, there may be only a few underlying or latent factors that account for most of the variation in the response. The general idea of PLS is to try to extract these latent factors, accounting for as much of the manifest factor variation. This rather depends on the nature of the PLS predictor. Thus, the fitness indices developed alongside this approach investigate the model's adequacy in predicting the dependent variables, including indices such as redundancy and GOF. These indices indicate to what extent the reagents' measurement model can predict their sub-structural constructs and to what extent the exogenous variables of structural models can predict the endogenous variables. Thus, the present study first reported the indices of model fitness quality and proceeded to report the final results of the relationships between the variables. Figure 1 demonstrates the fitness of the research model.

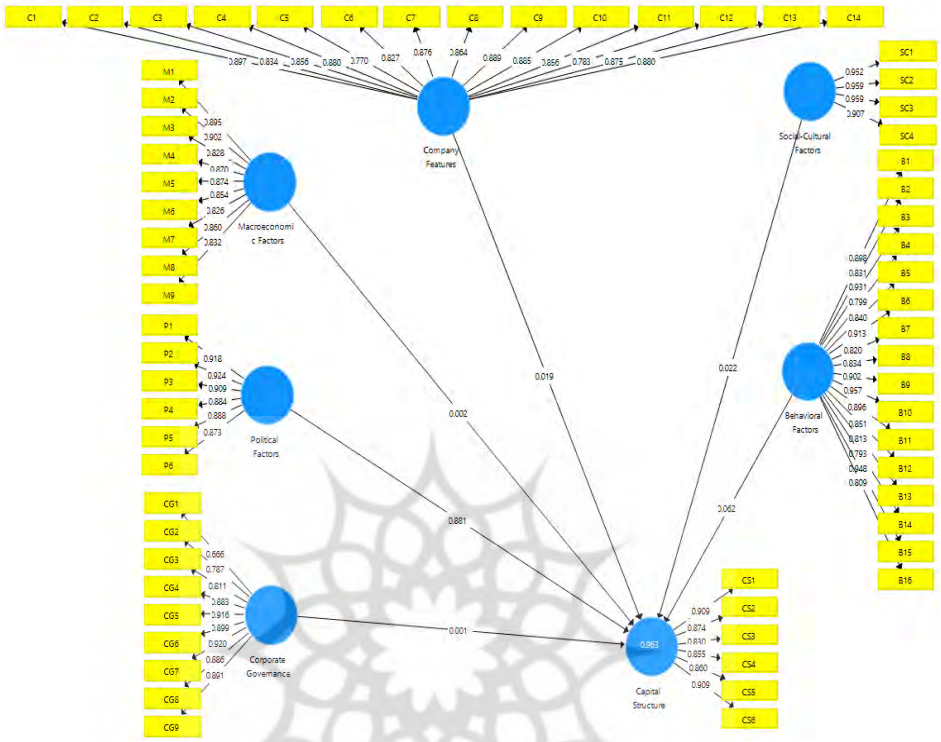

Fig. 1. Research model fitness (path coefficients)

Factor loads

The reflective measurement model will be homogenous if the absolute value of the factor load of each of the observable variables with the corresponding latent variables is at least 0.7. Some researchers recommend removing the observable reflective variables with factor loads smaller than 0.4 from the measurement model. Table 3 demonstrates that the factor loads of all observable variables were larger than 0.7 (except for the managerial ownership with a factor load of 0.666, which is negligible due to its insignificant difference from 0.7). So, the observable variables corresponding to the latent variables managed to explain their variables well. The results of this table also indicated that confirmatory factor analysis confirmed the variables of the quantitative section.

Table 3. Factor loads of research variables

No.	Latent variable	Observable variable	Factor load
1	Behavioral factors	Overconfidence	0.898
		Management abilities	0.831
		Manager experiences	0.931
		Managers' gender	0.799
		CEO education	0.840
		Perception of the macroeconomic environment	0.913
		Imitating other superior managers in the industry	0.820
		Manager personality type	0.834
		Over-optimism	0.902
		Management tenure	0.957
		Financial knowledge	0.896
		Business intelligence	0.851
		Flexibility in decision-making	0.813
		Conservatism	0.793
		Short-sightedness	0.948
		Perceptual errors	0.809
2	Macroeconomic factors	Business periods	0.895
		Economic growth	0.902
		Information rent	0.828
		Tax rates	0.870
		Interest rate	0.874
		Economic sanctions	0.854
		Exchange rate changes	0.826
		Inflation rate changes	0.860
		Financial and monetary policy uncertainty	0.832
3	Socio-cultural factors	Sharia-compliant finance	0.952
		Organizational culture	0.959
		Religious orientation	0.959
		Social trust	0.907
4	Political factors	Quality of governance	0.918
		President elections	0.924
		Non-economic sanctions	0.909
		Administrative corruption	0.884
		Rule of law	0.888
		Setting new regulations	0.873
5	Firm features	Human capital	0.880
		Tangible assets	0.834
		Profitability	0.856
		Market to book value	0.880
		Dividends	0.770
		Non-debt tax shield	0.827
		Firm size	0.876
		Operational risk	0.864

		Research and development costs	0.889
		Return on assets	0.897
		Firm age	0.885
		Auditing quality	0.856
		Financial leverage	0.783
		Systematic risk	0.875
6	Corporate governance	Liquidity	0.666
		Managerial ownership	0.787
		Institutional ownership	0.811
		Corporate leadership quality	0.883
		Ownership centralization	0.916
		Decentralized ownership	0.899
		Institutional supervision	0.920
		CEO power	0.886
		Board composition	0.891
7	Capital structure	Factor 1	0.909
		Factor 2	0.874
		Factor 3	0.830
		Factor 4	0.855
		Factor 5	0.860
		Factor 6	0.909

Reliability and validity indices

Among the other reliability indices, one can mention Cronbach's alpha and composite reliability (P Delvin-Goldstein). The acceptable value for these indices is 0.7. Results of Table 4 demonstrate that Cronbach's alpha and composite reliability (C.R.) index were larger than 0.7 for all latent variables. Cronbach's alpha was larger than 0.7 for all research variables, meaning all research variables are sufficiently reliable. The composite reliability index was also larger than 0.7 for all research variables, which means all the variables had an acceptable level of reliability.

The AVE index was used to examine validity. The Average Variance Extracted (AVE) was proposed by Fornell and Larcker (1981) as an index to measure the internal validity of the reflective measurement model. This index indicates the correlation of one construct with the indices representing it. A minimum acceptable value of 0.5 has been considered for this index, indicating that the desired latent variable explains 50% of the variation in its observables. As Table 4 indicates, the AVE index was larger than 0.5 for all latent variables, meaning the research variables had favorable validity.

Table 4. Model reliability and validity

Variable	Cronbach's alpha	CR	AVE
Behavioral factors	0.978	0.980	0.750
Firm features	0.972	0.975	0.733
Corporate governance	0.953	0.960	0.730
Macroeconomic factors	0.956	0.963	0.741
Political factors	0.953	0.962	0.809
Socio-cultural factors	0.960	0.971	0.892
Capital structure	0.938	0.951	0.763

Coefficient of determination and adjusted coefficient of determination

The coefficient of determination is the main criterion used to evaluate the endogenous latent variables of the path model. This index demonstrates what percentage of the endogenous variable is explained by the exogenous variable. The values of 0.19, 0.33, and 0.67 have been considered poor, moderate, and considerable for endogenous latent variables in structural path models, respectively. However, moderate coefficients of determination are also considered acceptable if the endogenous latent variable is under the influence of a limited number of exogenous variables. The adjusted coefficient of determination is also similar to the coefficient of determination, except that the coefficient of determination assumes that each independent variable observed in the model explains the variations in the dependent variables. The percentage reported by the coefficient of determination is thus reported, assuming the influence of all independent variables on the dependent variables. However, the percentage reported by the adjusted coefficient of determination is only obtained from the real influence of the independent variables in the model on the dependent variables rather than all the independent variables. Another difference between the two coefficients is that the fitness of the variables for the model would not be discernible from the coefficient of determination even in high values.

In contrast, the adjusted coefficient of determination can be trusted. Table 5 demonstrates that the coefficient of determination and adjusted coefficient of determination for the variable of capital structure as the dependent variable were 0.963 and 0.961. thus, the independent variables influencing capital structure explained 96.3% of the variation in this variable.

Table 5. Coefficient of determination and adjusted coefficient of determination

Variable	R^2	R^2 adjusted
Capital structure	0.963	0.961

F2 effect size

The F2 effect size index determines the intensity of the relationship between the latent variables of the model and was introduced by Cohen (1981). This criterion can be used to measure the size of an exogenous variable's impact on an endogenous variable in the structural equation model. Cohen proposed the values of 0.02, 0.15, and 0.35 for small, moderate, and significant effects, respectively. Table 6 demonstrates that the variables of behavioral factors, firm features, and corporate governance had a relatively small effect on capital structure. In contrast, macroeconomic and socio-cultural factors had moderate effects, and political factors significantly affected the capital structure.

Table 6. F2 effect size

Variable	Capital structure
Behavioral factors	0.091
Firm features	0.131
Corporate governance	0.111
Macroeconomic factors	0.162
Political factors	0.967
Socio-cultural factors	0.163

Communality, redundancy, and GOF indices

Other measurement model evaluation indices include tests to evaluate the quality of the model. The quality of the measurement model is investigated using cross-validity commonalities (CV Com), cross-validity redundancy (CV Red), and GOF indices. Positive communality and redundancy indices mean that the reflective measurement model is acceptable. The GOF index, the squared multiplication of the two mean values of communal values and coefficient of determination, ranges between zero and one. Tezel et al. (2009) introduced the three values of 0.01, 0.25, and 0.36 as weak, moderate, and strong GOF values, respectively. As Table 7 demonstrates, all latent variables' commonality and redundancy values were positive. The GOF index was also calculated at 0.799, which indicates that the fitted model is of favorable quality.

Table 7. Measurement model quality indices

Variable	CV Com	CV Red	GOF
Behavioral factors	0.674	-	0.799
Firm features	0.657	-	
Corporate governance	0.633	-	
Macroeconomic factors	0.633	-	
Political factors	0.687	-	
Socio-cultural factors	0.736	-	
Capital structure	0.631	0.682	

Conclusion

The present study sought to identify the factors influencing firms' capital structure in Iran. Qualitative and quantitative methods were employed to accomplish research goals. The snowball technique was used in the qualitative section of the study to refer to experts and interview them regarding the goals of the study. A total of 28 concepts under six main components were identified according to expert opinions in the first stage of the study. After the concepts from the first stage were collected and organized, they were sent back to the experts, who inquired about the concepts from the first stage—eventually, 58 sub-components under six components made up the research model. The final research model included the components of behavioral factors, macroeconomic factors, socio-cultural factors, political factors, firm features, and corporate governance. The subcomponents of the behavioral factors included overconfidence, management abilities, managers' experience, managers' gender, CEO education, perception of the macroeconomic environment, imitating other superior managers in the industry, managers' personality type, over-optimism, management tenure, financial knowledge, business intelligence, flexibility in decision-making, conservatism, short-sightedness, and perceptual errors. The emergence of behavioral finance resulted from understanding the importance of measuring human behavior as a factor with transcendent consequences for financial decisions. Hence, most behavioral finance studies are focused on observable behaviors. However, the item response theory presents an integrated method for disciplines that work with cognitive variables. Accepting opportunities for new knowledge is essential for firm decisions to respond to the mental views of financial managers.

Quantitative tools were used to determine the validity of the research model. The tool used in the present study reflected the elements making up the capital structure. In this regard, the notable point is how the classic criterion of

structural capital components can explain financial managers' perception of decision-making. The research results in this area can be pretty interesting since we have confirmed a capital structure theory at the construct level. The conformity of the results and the obtained reliability levels indicate that this theory fits the given dimensions well. Moreover, relevant evidence indicates that senior financial managers adopt various states considering internal and external factors at the structural level, which can cause cognitive bias in decision-making. However, further research using larger samples is required to confirm the construct and dimensions of the established theory.

Interpreting the capital structure theory at the construct level provides a valuable opportunity for this approach to oppose the classical approach in corporate financial theory. The present study thus suggests that using the item response theory in behavioral finance can pave new ways to study the cognitive biases involved in the financial decision-making process. This means that behavioral finance can be considered cognitive finance as well. Thus, the present work recommends the use of the elements in the capital structure as a cognitive construct containing the 16 dimensions of overconfidence, management abilities, managers' experience, managers' gender, CEO education, perception of the macroeconomic environment, imitating other superior managers in the industry, managers' personality type, over-optimism, management tenure, financial knowledge, business intelligence, flexibility in decision-making, conservatism, short-sightedness, and perceptual errors.

Moreover, the results present a measurement scale to evaluate the use of capital structure elements by some other factors such as firm features, corporate governance, political factors, socio-cultural factors, and macroeconomic factors at the firm level. The field of corporate finance could be the most mispleading area in economic research (followed by the behavioral economy). Many research studies identified that corporate finance has to do neither with corporations nor financing decisions. Still, the most important financial share of behavioral participation may be beyond the objective application of insights from psychology to the financial puzzles of the firm. Research on corporate behavior is imperative for developing a behavioral economy because it employs behavioral assumptions for individual consumers or smaller investors. A behavioral framework is essential for understanding intelligent and trained people. Experts leading large organizations and even firm leaders deviate from our standard neoclassic rational decision-making model systematically and –for instance- show overconfidence, conservatism, and bias when making far-reaching corporate decisions.

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