



Characteristics of Venture Capitalists and Contractual Covenants: An Analysis of the Iranian Venture Capital Market

Ali Nazemi^{a,*} , Farshad Khodayarighozloo^a , and Mohammadsadegh Khayatian^b 

a. Department of Economics, Kharazmi University, Tehran, Iran.

b. Institute for Science and Technology Studies, Shahid Beheshti University, Tehran, Iran.

* Corresponding author.

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Abstract

This research was motivated by the need to illuminate the relationship between the characteristics of a venture capitalist and the types of covenants used in the preparation of an investment contract. Accordingly, we set out to gain a better understanding of venture capitalists' attitudes toward the structures of their investment contracts on the basis of investment characteristics such as the age of a venture capital fund, their preferences for early or later stage investments, the number of investments made, and the size of a fund portfolio. The study involved 36 venture capitalist members of the Iranian Venture Capital Association, from whom data were collected through structured questionnaires combined with personal interviews. The twenty-one separate contractual covenants were then examined through cluster analysis, analysis of variance, and logistic regression. The findings reveal that experienced venture capitalists tend to prioritize control rights and rights to return streams in their contracts. The study contributes to the understanding of venture capital contracting practices and offers insights for venture capitalists, entrepreneurs, and policymakers in Iran and beyond.

Keywords: economics of contract, entrepreneurship, investment decisions, property rights, venture capital.

JEL Classification: D86, G11, G24, L26, M16, P14.

Introduction

In the Iranian venture capital (VC) industry, there are a variety of government, quasi-government and private actors with different but parallel goals, such as technology development, social welfare, and the acquisition of economic benefits. Government institutions such as the Vice Presidency for Science and Technology, the Ministry of Information and Communications Technology are among the most important governmental actors along with government funding institutions such as the Iran National Innovation Fund and play a key role in financing Iran's innovation and technology ecosystem (Mirjalili and Karimzadeh, 2021).

For important reasons such as the very risky nature of this type of financing, contracts are a fundamental part of venture capital (Manigart et al., 1997). Understanding how to form, perform, and execute contracts between a venture capitalist and an entrepreneur is crucial to the success of a venture capitalist's portfolio (Nasikh, 2021). Some of its main aspects are the completion of a contract between a venture capitalist and an entrepreneur and inclusion of covenants in the contract (Zarei et al., 2015); observations have indicated that creating appropriate investment contracts plays an essential role in control over capital investment (Gompers et al., 2020).

Considerable literature has recently emerged around the role of the contractual covenants in preventing and resolving problems in the venture capitalist-entrepreneur relationship (Isaksson et al., 2004; Parhankangas et al., 2005). In addition, other studies address the response of venture capitalists to unfulfilled expectations by considering the internal and external characteristics of them (Higashide and Birley, 2002; Parhankangas and Landström, 2004). In this paper, we attempt to link these two streams of literature, by exploring the relationship between the characteristics of a venture capitalist and the types of covenants used in the preparation of an investment contract.

The issues above highlight the need to conduct empirical research on VC, which is difficult to obtain (Yang et al., 2009). This difficulty means that relatively little research has been carried out on this problem. To fill this gap, the current empirical research was conducted on a sample of 36 medium and large venture capitalists operating in Iran to verify the hypothesis that the background features of funds affect the covenants that are important to venture capitalists in the preparation of investment contracts. In particular, the aim of this study is to shed light on the relationship between the Iranian venture capitalists' prior professional experience and the types of covenants used in the preparation of an investment contract.

The participating companies include strategic venture capitalists (corporate groups), accelerators, growth equity venture funds, and private equity firms, categorized on the basis of the divisions made by the Iran National Innovation Fund. Given the lack of time series data on the Iranian VC industry, data were collected from each of the companies using a standardized questionnaire survey. The data were then subjected to cluster analysis, analysis of variance (ANOVA), and logistic regression to obtain statistically reliable results. This study is among the first to comprehensively examine the behaviors of Iranian venture capitalists.

The rest of the paper is organized as follows: Section 2 presents the literature review, by which research gaps were identified. Section 3 describes the sources and methods used to collect data and determine sample characteristics, as well as the cluster analysis, ANOVA, and logistic regression conducted in the work. Section 4 discusses the results of the analyses and addresses the research question. Section 5 concludes with an identification of areas for further research.

Literature Review

Prior to the 1990s, the role of venture capitalism was largely unknown, mainly due to a lack of data. At the end of this decade, however, a good summary of venture capitalist classifications was provided, thereby driving a surge of VC research that covers various aspects of this practice (Amit et al., 1990). However, seminal works at the end of this decade categorized venture capitalists, sparking a surge in research exploring various aspects of their practices (Wright et al., 1999). What we know about VC is based largely on empirical studies that investigated the substantial financial gains earned by VC-backed companies. VC contracts are similar in many ways because venture capital partnerships have many elements in common (Sahlman, 2022). The appropriate structuring of a VC contract can significantly affect the achievement of goals desired by venture capitalists and investees. In other words, a deal should be arranged in such a way that ensures that both investees and VC companies are comfortable with company-favorable contracts (Mbulawa et al., 2022).

Since there is potential for different general goals, management styles, and risk preferences, entrepreneurs are in many cases likely to choose actions that align with their interests but are incompatible with those of venture capitalists (Amit et al., 1990). Because the VC model of investment can be implemented in an environment of uncertainty and immeasurable risks, venture capitalists use a variety of covenants to limit such hazards (Isaksson et al., 2004). Optimal contract theory, in the absence of information or its asymmetric distribution among agents, has received notable attention (Casamatta, 2003). For example, highlighting the importance of contracts, Jensen and Meckling (1979) developed elements of the theory to determine the factors influencing the creation and issuance of debt and equity claims. Kaplan and Strömberg (2003) identified the structural features of VC contracts, such as the roles that internal, external, and execution risks play in determining the contractual provisions incorporated into these agreements. Given that venture capitalists cannot be aware of all potential consequences, corporate control and minimizing potential agency costs are their primary focus. A contract

delineates control rights and rights to return streams and may also allow a party to convert debt into equity or vice versa (Kaplan et al., 2007). The question now is whether companies use standard contracts to solve such contract problems and reduce their conflict of interest.

Recent studies have highlighted the importance of contractual covenants in aligning the interests of venture capitalists and entrepreneurs (Fu et al., 2023). These covenants play a crucial role in mitigating uncertainties inherent in venture capital investments, especially in environments characterized by high risk and asymmetric information (Klausner and Litvak, 2017). These studies have also explored the role of venture capitalists' experience in shaping their investment strategies and the terms of their contracts (Casamatta and Haritchabalet, 2007). By incorporating these recent findings, the literature review now offers a more up-to-date and nuanced understanding of the venture capital landscape.

According to Isaksson et al. (2004), the inherent uncertainty in the industry leads venture capitalists, especially younger venture capital firms, to pursue more experienced counterparts and standardize their contracts. They also believe that the institutional approach of VC contracts will provide new insights and information for the actors of this ecosystem. Based on the literature, the question arises as to which factors may prevent investment contracts from being homogeneous. The challenge is that the lack of specific research in this area means that little is known about the relationship between the characteristics of venture capitalists and the covenants found in the stock purchase agreements into which they enter with investee companies. In conclusion, understanding the intricate relationship between VC characteristics and contractual practices is pivotal for optimizing investment strategies and fostering sustainable growth in the venture capital ecosystem. Ongoing research in this field promises to illuminate new avenues for enhancing investor-entrepreneur dynamics and refining contractual frameworks to meet evolving industry demands.

Hypotheses

Against this background, the findings seem to indicate that standardized covenants are considered by venture capitalists to regulate their contractual relations with the investees (Gompers et al., 2020; Wang and Zhou, 2004). We developed a hypothesis to test whether venture capitalists in Iran resort to this practice. This leads to our first hypothesis about the investment contract:

Hypothesis (1): Venture capitalists' experience level positively correlates with the inclusion of control rights and rights to return streams in investment contracts.

In this paper, we discuss the link between the content of contracts and the nature of venture capitalists. Our research framework is shown in Figure 1 and is described in the text below.

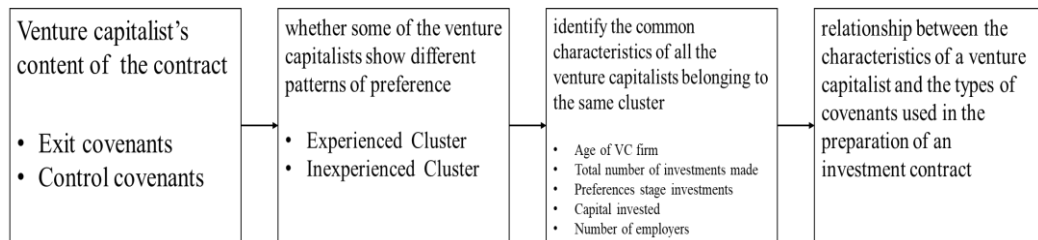


Figure 1. Research Framework

Source: Research findings.

Note: This figure illustrates the conceptual model of the study, showing the relationship between venture capitalists' characteristics and their preferences for contractual covenants. It also outlines the research methods used to test the hypotheses and analyze the data.

The participants were asked whether they considered the 21 covenants as essential, important, desirable, or irrelevant. Based on segmentation methods, we then concluded that the types of conventional covenants are different for two groups of venture capitalists. Therefore, our second hypothesis shows the following:

Hypothesis (2): There are organizational factors in the venture capital industry that lead to the heterogeneity of some contractual covenants.

Methodology

The data collected from venture capitalists were analyzed using cluster analysis, analysis of variance (ANOVA), and logistic regression. These methods were chosen for their suitability in addressing the research questions and their ability to provide insights into the relationship between venture capitalists' characteristics and their contractual practices.

Sampling Process

Due to time, money and other logistical constraints, it is impossible for the researcher to collect data that covers the entire population. Therefore, the solution is found in the form of sampling whereby a researcher chooses a significant sample

that represents the population. Lerner and Nanda (2020) contend that the private nature of venture capital investment means a general absence of publicly available information. They believe that a relatively small number of venture capital firms in most countries has implications for the extent to which these firms can be surveyed and consequent small and potentially biased sample sizes. On the other hand, Creswell and Poth (2016) argue that using sampling gives a better understanding of a phenomenon because with a small and more representative sample, the researcher can devote more time and attention to designing, piloting, collecting, and analyzing the data. Also, with a smaller sample more detailed information can be obtained and a better quality of interviewer can be hired.

Sampling size is one of the most important elements in reducing sampling error. While there are other reasons for sampling as mentioned above, the primary reason for sampling in the population of venture capitalists in Iran is apparent because the precise population is not known. In this study, the aim is to maximize the sample size to be able to test our hypotheses and to be able to compare the results to previous studies. VanVoorhis and Morgan (2007) offer guidelines for estimating the appropriate sample size:

- Sample sizes between 30 and 500 are generally suitable for most studies.
- For subgroup analysis (e.g., gender, experience levels), a minimum of 30 samples per category is advised.
- In multivariate research like multiple regression analysis, the sample size should be at least ten times larger than the number of variables.
- For experiments with strict control, successful research can be conducted with sample sizes as small as 10 to 30.

The study's sample comprises 36 venture capitalists chosen for their active engagement in the Iranian venture capital market and their willingness to participate in the study. The sample size was determined by the number of venture capitalists who responded to the invitation to participate and completed the data collection process. The selection of these venture capitalists aimed to capture a diverse range of experiences and investment practices within the Iranian VC industry.

This study has several limitations that should be acknowledged. One of the primary limitations is the small sample, which consists of 36 venture capitalists from the Iranian Venture Capital Association. While this sample size is sufficient for the statistical analyses conducted, it may limit the generalizability of the findings to the broader venture capital industry in Iran and beyond.

Cluster Analysis

Next, we conducted a cluster analysis to ascertain whether clustering in terms of venture capitalist behaviors occurs. Cluster analysis is meant to classify objects or cases into relatively homogeneous groups, hence the clusters. Objects in each cluster tend to be similar to one another and dissimilar to objects in other clusters (Malhotra, 2020).

Cluster analysis was employed to identify patterns and groupings among the venture capitalists based on their responses to the questionnaire. This method allowed us to explore whether venture capitalists with similar characteristics tend to use similar types of covenants in their investment contracts. The cluster analysis was grounded in the venture capital literature, which suggests that venture capitalists often exhibit distinct behaviors and preferences in their investment strategies (Kaplan and Lerner, 2016).

The method adopted in this work involved calculating the matrix of distances between sample pieces using Gower's formula (Podani, 1999):

$$S_{ij} = \frac{\sum_k^n w_{ijk} S_{ijk}}{\sum_k^n w_{ijk}} \quad (1)$$

where S_{ijk} is the distance between i and j in variable k , and w_{ijk} denotes the weight of variable k between observations i and j .

This method enables the calculation of the distance between sample pieces with different types of data, such as ordinal and quantitative data—a feature that cannot be found in other methods of sample distance calculation, such as Euclidean methods and Pearson's correlation coefficient (Podani, 1999).

Analysis of Variance (ANOVA)

Analysis of variance (ANOVA) was used to determine if there were statistically significant differences in the mean values of the covenants across the clusters identified. This technique enabled us to test whether the clusters differed in their preferences for specific contractual covenants. ANOVA is a standard method in the VC literature for comparing the means of different groups (Gompers et al., 2020).

As an extension to the cluster analysis, we conducted ANOVA tests to determine exactly where the variables differ. ANOVA tests the measure of dispersion among means for two or more populations, but the difference in mean values of a dependent variable for several categories of an independent variable can be determined by performing one-way ANOVA.

In this analysis, the variables that cause the formation of clusters were identified on the basis of the f value. All f values that were greater than the critical value listed in the f distribution table were considered the variables responsible for cluster formation. These results are presented in Section 4.

Logistic Regression

Logistic regression was applied to assess the collective effects of venture capitalists' characteristics on the inclusion of specific covenants in investment contracts. This method is particularly useful for predicting the probability of a binary outcome (e.g., the inclusion or exclusion of a covenant) based on multiple independent variables. Logistic regression has been widely used in venture capital research to model the relationship between venture capitalists' decisions and various factors (Gompers et al., 2020).

Logistic regression is one of the most important tools of data mining used to describe the relationship of several independent variables with a dichotomous dependent variable (Maimon and Rokach, 2005). In this method, a response variable should be an integer or a relative variable. The simplest case of logistic regression is when the response variable Y_i is binary, so that it assumes only the two values 0 and 1, with probability p_i and $1 - p_i$ respectively. We can describe the Logistic Regression model for the i -th unit of interest by the logit of the probability p_i , as a linear function of the predictors:

$$\text{logit}(p_i) = \log \frac{p_i}{1 - p_i} = \eta_i = x_i' \beta \quad (2)$$

where, x_i is the vector of covariates and β is the vector of regression coefficients. For more details about Logit models the reader can consult, for example, Cramer (2003).

The selection of these analytical techniques was grounded in the venture capital literature, which often employs similar methods to analyze the behaviors and decision-making processes of venture capitalists. Cluster analysis, ANOVA, and logistic regression are well-suited for exploring the relationships between venture capitalists' characteristics and their contractual practices, providing a comprehensive understanding of the factors that influence the structuring of venture capital contracts.

Results

This section discusses the results of the analyses of the data collected from 36 venture capitalists operating in the Iranian VC industry. The first set of questions

presented to the participants was intended to obtain a general description of their characteristics. After the survey was administered, statistical tests related to the covenants of VC agreements were performed. There was also a conscious attempt to gather additional data to identify useful connections with the hypothesis formulated in this study. The purpose of this work was to develop a broader understanding of the behaviors of venture capitalists in Iran on the basis of their demographic backgrounds.

Descriptive Statistics

Surprisingly, contrary to previous findings (Gompers and Lerner, 1996), the approval of the appointment of chairpersons or key employees was second to last (Table 1). Five covenants were identified as primary safeguards of the interests of venture capitalists before the role of board representation enters the picture. This result shows that direct equity investment deals do not necessarily require the physical presence of venture capitalists as a paramount condition. Rather, a tightly structured deal with stringent covenants can provide sufficient protection against moral hazards, as suggested by Gompers and Lerner (1996) and Mitchell et al. (1997). Among the 21 covenants, 12 covenants exhibit mean values that represent their essentiality or importance, and almost all of them have a standard deviation lower than 1 (Table 1). Therefore, venture capitalists use a similar variety of covenants in structuring a transaction to control post-investment moral hazards.

Table 1. A Descriptive of Covenants for Structuring Contracts

	N	Minimum	Maximum	Mean	Std. Deviation
Approval for Borrowing and Equity Dilution	36	2	4	3.83	0.447
Approval for Signing Major Contracts	36	2	4	3.36	0.762
Approval for Disposing Major Assets	36	2	4	3.22	0.722
Right to Inspect Books & Visit Offices, Factories	36	1	4	3.19	0.92
Approval for Treasury Operations	36	1	4	3.17	0.91
Importance of Proportional Board Representation	36	2	4	3.14	0.762
Pre-emption rights on new share issues	36	1	4	3.14	0.833
Importance of Casting Vote	36	2	4	3.11	0.708
Maintaining an Escrow Account	36	1	4	3.11	0.887
Monthly Financial Reporting	36	1	4	3.08	0.996
Approval for the Appointment of Auditors	36	1	4	3.03	1.082

Liquidation preference and deemed liquidation	36	1	4	3	1.014
Exit Timing and Mechanism	36	1	4	2.94	1.094
Specified ownership of properties and assets	36	2	4	2.94	0.754
Confidentiality, Intellectual Property Rights	36	1	4	2.89	0.919
Approval for Setting Executive Remuneration	36	1	4	2.81	0.92
Approval for Signing Major Contracts	36	1	4	2.72	0.974
Employee Stock Option Plans	36	1	4	2.72	0.944
Right of first refusal, co-sale and tag-along rights	36	1	4	2.58	1.156
Approval for the Appointment of chairman or Key-Employees	36	1	4	2.11	0.95
drag along	36	1	4	2.06	0.955

Source: Research findings.

Note: The table presents the mean values and standard deviations for each covenant on a scale from 1 to 4, where 4 indicates 'essential,' 3 'important,' 2 'desirable,' and 1 'irrelevant.'

Preliminary Hypothesis Tests

This subsection focuses on (1) the identification of clusters, (2) in what aspects they differ and to what extent, and (3) whether the demographic background of each cluster or the demographic characteristics of the entire sample affect the covenants included in VC agreements. These issues were illuminated via multinomial regression analysis to explore how venture capitalists with such cluster features relate to a particular hypothesis. Figure 2 shows that there are primarily two distinct clusters of venture capitalists. The large cluster has 19

members, and the smaller one comprises 17 members, indicating that venture capitalists differ from one another organizationally.

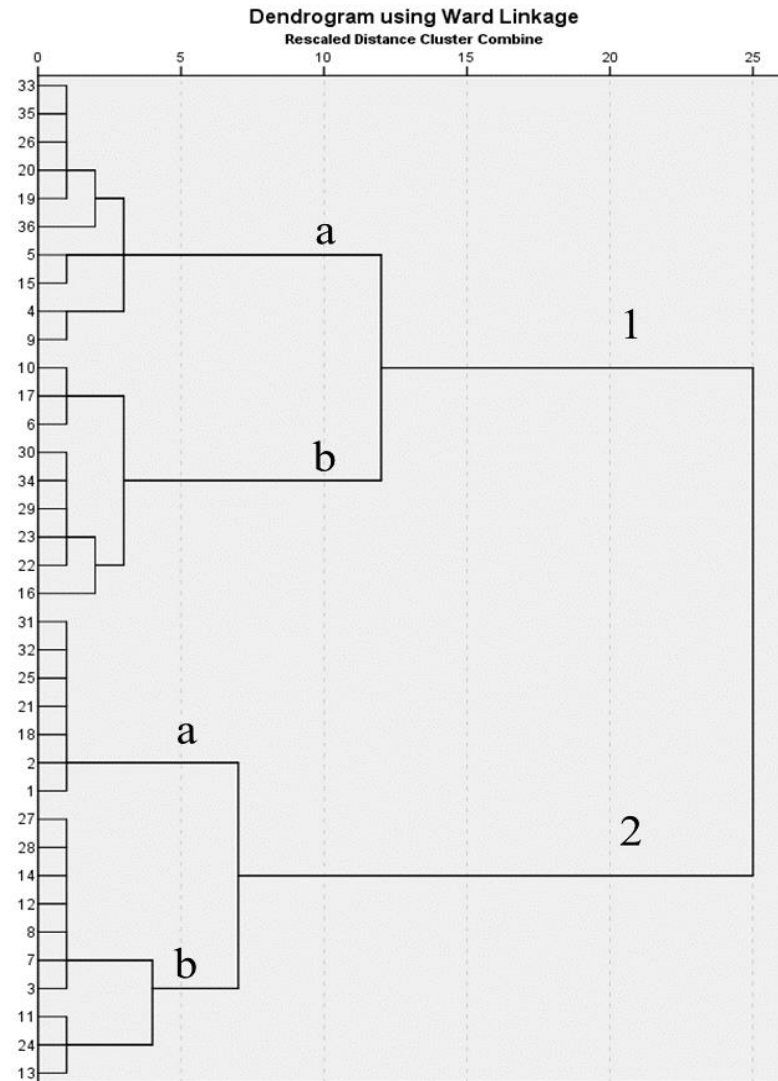


Figure 2. A Specimen Hierarchical Cluster Analysis

Source: Research findings.

Note: The dendrogram illustrates the formation of clusters based on the similarity of venture capitalists' responses to the importance of contractual covenants.

VC researchers Manigart et al. (1997) used cluster analysis in their studies. The popular method by which clusters are formed is agglomerative hierarchical

clustering, wherein clusters are formed when cases are grouped into large clusters until all cases are members of a single cluster. An important issue in clustering techniques is deciding the number of clusters, but Hair, Black, and Babin (2008) conceded that no standard objective selection procedure exists.

To identify the common characteristics of all the venture capitalists belonging to the same cluster, we divided the entire sample on the basis of age (old vs. young), number of investments made (many vs. few), value of the fund portfolio (low vs. high), total number of employees (many vs. few), and stage of investment (early vs. late). The cut-off for each of these categories was established by (1) first taking the average and (2) dividing the entire sample as above and below average. Table 2 shows a snapshot of the entire sample. The aim, essentially, was to pinpoint the underlying behavioral characteristics of large portfolio-based funds that are handled by older companies and for which many investments are made.

Table 2. The Division of the Entire Sample into Five Subgroups

Age	NO. of investments	Investment preferences	Portfolio Size	No. of employees
Y = 17	F = 17	E = 25	L = 24	F = 10
O = 19	M = 19	La = 11	H = 12	M = 26

Source: Research findings.

Note: F = Few; M = Many; Y = Younger; O = Older; La = Late Stage, E = Early Stage; H = High value; L = Low value.

The purpose of this division is to understand the behavioral characteristics of venture capitalists with different backgrounds and how these characteristics might influence their contractual practices. After ascertaining the division shown by the clustering among the venture capitalists, who were grouped on the basis of their survey responses, an attempt was made to determine whether the two groups have significantly different characteristics. As can be seen in Table 3, the small cluster is made up almost entirely of venture capitalists that have substantial resources, are more than six years old, and often have many portfolios but invest in late stages. In contrast, the large cluster consists almost entirely of venture capitalists that have low resources, are less than six years old, and often have portfolios composed of numerous companies but invest in the early stages.

Table 3. A Specimen of the Common Characteristics of Smaller Cluster Members

Cluster 1: Inexperienced VC		Cluster 2: Experienced VC	
Cluster 1a:	Cluster 1b:	Cluster 2a:	Cluster 2b:
Younger age	Younger age	Older age	Older age
Few NO. of investments	Few NO. of investments	Many NO. of investments	Many NO. of investments
Early Stage	Early Stage	Early Stage	Late Stage
Little portfolio Size	Little portfolio Size	Little portfolio Size	High portfolio Size
Few employees	Many employees	Many employees	Many employees

Source: Research findings.

Note: The table is likely used to highlight the differences between the two clusters of venture capitalists based on their demographic and investment profile.

This table presents a snapshot of the characteristics shared by venture capitalists in the smaller cluster. It shows that this cluster is composed of older venture capitalists with substantial resources, many investments, and a focus on late-stage investments. This contrasts with the larger cluster, which consists of younger venture capitalists with fewer resources, fewer investments, and a focus on early-stage investments. The objective of cluster analysis is to create two or more groups on the basis of responses, but it only provides evidence of differences, without identifying the factors that cause differentiation. Therefore, it was not clear whether some of the venture capitalists showed different patterns of preference. We conducted ANOVA to identify the variables that respond differently. Ehrlich et al. (1994) performed this analysis to test the means of two or more populations. Therefore, in the cluster analysis, the two clusters were treated as separate variables, but in the ANOVA, they were used as an independent variable.

Table 4 displays the ANOVA results for the covenants included in venture capital contracts. The sum of squares and mean square values are shown for 'Between Groups' and 'Within Groups' to assess the variance in the data. The F and Sig. values indicate the statistical significance of the differences between the clusters for each covenant. The table identifies four covenants that are statistically significant, suggesting that these covenants are key differentiators between the clusters of venture capitalists. In ANOVA, the statistical significance of variables is depicted through F values that are higher than the critical value of the F-distribution for the degrees of freedom of these variables. Table 4 shows that 4 out of the 21 variables examined in this work are statistically significant in terms of F values. The threshold figure in the F value distribution for degrees of freedom 1

and 34 is approximately 4.13. Therefore, the F values of the following variables are all greater than 4.13:

- Approval for Setting Executive Remuneration
- Liquidation preference and deemed liquidation
- Right to Inspect Books & Visit Offices, Factories
- Anti-dilution (or price protection)

This result indicates that the two groups differ in their responses with regard to these 4 variables.

Table 4. ANOVA - List of Covenants for Structuring Subscription Agreements

		Sum of Squares	df	Mean Square	F	Sig.
drag along rights	Between Groups	.471	1	.471	.510	.480
	Within Groups	31.418	34	.924		
	Total	31.889	35			
Importance of Proportional Board Representation	Between Groups	.206	1	.206	.349	.558
	Within Groups	20.099	34	.591		
	Total	20.306	35			
Approval for the Appointment of Key Employees	Between Groups	.299	1	.299	.339	.564
	Within Groups	30.006	34	.883		
	Total	30.306	35			
Approval for the Appointment of Auditors	Between Groups	3.406	1	3.406	3.082	.088
	Within Groups	37.567	34	1.105		
	Total	40.972	35			
Approval for Treasury Operations	Between Groups	1.638	1	1.638	2.035	.163
	Within Groups	27.362	34	.805		
	Total	29.000	35			
Monthly Financial Reporting	Between Groups	1.431	1	1.431	1.460	.235
	Within Groups	33.319	34	.980		
	Total					

	Total	34.750	35			
Approval for Setting Executive Remuneration	Between Groups	4.431	1	4.431	5.977	.020
	Within Groups	25.207	34	.741		
	Total	29.639	35			
Approval for Signing Major Contracts	Between Groups	.331	1	.331	.342	.563
	Within Groups	32.892	34	.967		
	Total	33.222	35			
Employee Stock Option Plans	Between Groups	.058	1	.058	.063	.803
	Within Groups	31.164	34	.917		
	Total	31.222	35			
Exit Timing and Mechanism	Between Groups	.421	1	.421	.346	.561
	Within Groups	41.467	34	1.220		
	Total	41.889	35			
Pre-emption rights on new share issues	Between Groups	.776	1	.776	1.122	.297
	Within Groups	23.529	34	.692		
	Total	24.306	35			
Confidentiality, Intellectual Property Rights	Between Groups	.001	1	.001	.002	.968
	Within Groups	29.554	34	.869		
	Total	29.556	35			
Liquidation preference and deemed liquidation	Between Groups	7.133	1	7.133	8.402	.007
	Within Groups	28.867	34	.849		
	Total	36.000	35			
Right to Inspect Books & Visit Offices, Factories	Between Groups	3.614	1	3.614	4.722	.037
	Within Groups	26.025	34	.765		
	Total	29.639	35			
Right of first refusal, co-sale and tag along rights	Between Groups	1.060	1	1.060	.788	.381

	Within Groups	45.690	34	1.344		
	Total	46.750	35			
Importance of Casting Vote	Between Groups	.497	1	.497	.990	.327
	Within Groups	17.059	34	.502		
	Total	17.556	35			
Approval for Borrowing and Equity Dilution	Between Groups	.375	1	.375	1.922	.175
	Within Groups	6.625	34	.195		
	Total	7.000	35			
Approval for Signing Major Contracts	Between Groups	.083	1	.083	.139	.712
	Within Groups	20.223	34	.595		
	Total	20.306	35			
Specified ownership of properties and assets	Between Groups	.099	1	.099	.171	.682
	Within Groups	19.789	34	.582		
	Total	19.889	35			
Anti-dilution (or price protection)	Between Groups	4.162	1	4.162	6.050	.019
	Within Groups	23.393	34	.688		
	Total	27.556	35			
Approval for Disposing Major Assets	Between Groups	.550	1	.550	1.059	.311
	Within Groups	17.672	34	.520		
	Total	18.222	35			

Source: Research findings.

Note: The table is used to determine if there are statistically significant differences in the mean values of the covenants across the clusters identified.

Logistic Regression

After identifying the differences between the Iranian funds in the use of different covenants in investment agreements through the ANOVA test, we assessed the collective effects of venture fund age, fund portfolio size, investment number, and investment stage on a set of related variables using logistic regression. We continued to omit the least significant variable until all the remaining variables

were collectively significant. In cases where no statistically significant results were found, venture capitalists were considered to use similar sources of information regardless of their background features. The logistic regression results further confirmed that fund characteristics collectively affect various investment covenants (Table 5). This table presents the results of the logistic regression analysis, which assessed the collective effects of venture capitalists' characteristics on the inclusion of specific covenants in investment contracts. The table shows the coefficients (B) and their standard errors (S.E.) for each covenant, along with the Wald statistics, degrees of freedom (df), and significance levels (Sig.). The covenants listed are those that were found to be collectively significant, indicating that they are influenced by the background features of the venture capital funds. Thus, the hypothesis related to contracts in Iran serving as tools for reducing risk was confirmed. Allison (1999) argued that because it is difficult to obtain statistically significant results on the basis of small samples, regression analysts are often tempted to raise the level of p values that they will accept as statistically significant (e.g., from .05 to .10). Therefore, considering the relatively small sample used in the present study, we regarded it as appropriate to raise the level of significance from .05 to .10. The collectively statistically significant covenants are listed in Table 5.

Table 5. Collectively Significant Variables

	B	S.E.	Wald	df	Sig.
Importance of Proportional Board Representation	-4.687	2.360	3.946	1	.047
Approval for the Appointment of Key Employees	4.287	1.955	4.811	1	.028
Approval for the Appointment of Auditors	3.171	1.577	4.040	1	.044
Approval for Treasury Operations	-5.518	2.533	4.744	1	.029
Liquidation preference and deemed liquidation	5.871	2.845	4.257	1	.039
Constant	-5.564	4.486	1.538	1	.215

Source: Research findings.

Note: The table likely includes the coefficients (B), standard errors (S.E.), Wald statistics, degrees of freedom (df), and significance levels (Sig.) for covenants that were found to be collectively significant.

After omitting the most non-significant variables, we found that the requirements (for the approval of the appointment of auditors, pre-emption rights on new share issues, liquidation preference and deemed liquidation, and the approval of borrowing and equity dilution) of small and large venture capitalists vary at a collectively significant level of about 90 percent. The individual significance levels of these four variables are presented in Table 5. This analysis

therefore revalidated the hypothesis related to the types of covenants in contract structures.

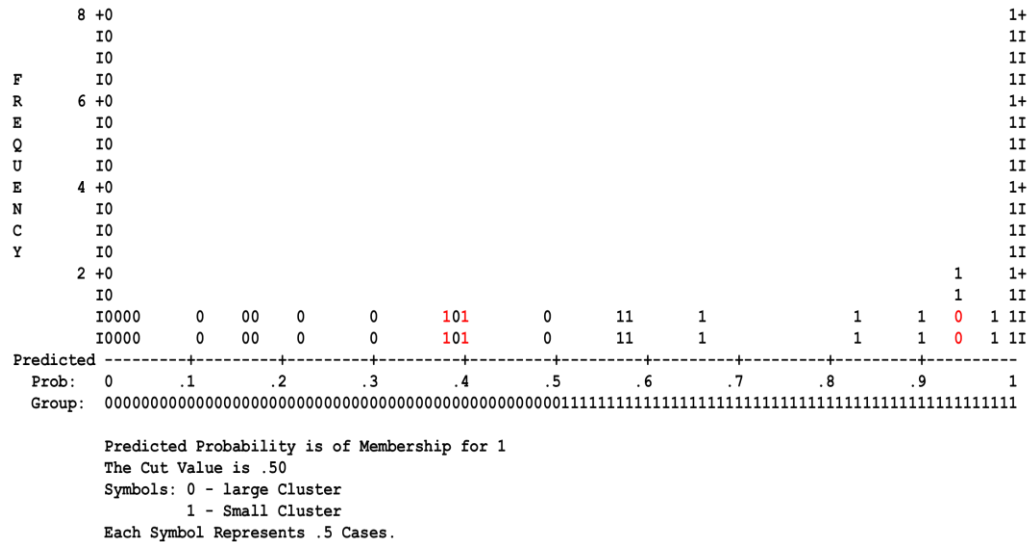


Figure 3. Predicted Probabilities of Structuring Covenants

Source: Research findings.

Figure 3 illustrates how the probabilities of including certain covenants in venture capital contracts vary according to the characteristics of the venture capitalists or their funds. This figure visualizes the results of the logistic regression analysis, showing the predicted probabilities of including specific covenants in venture capital contracts. The X-axis represents a range of venture capitalist characteristics or fund features, while the Y-axis shows the probability of a covenant being included. The figure highlights differences in covenant inclusion probabilities between the two clusters of venture capitalists, providing a visual comparison of their contractual practices. Figure 3 shows that two of the small group funds behave differently from the rest of the group members and behave similarly to the large group funds. These two venture capitalists are technology-focused investors and invest across a wide spectrum of industries, including technology. This is, perhaps, the reason why they are identified in terms of their choice of covenants with the large group of venture capitalists, as they primarily invest in considerable portfolios that, with a few exceptions, are young funds. Conversely, a capitalist from the large group behaves similarly to the small group at the right-hand side of the X-axis in Figure 3.

The results reveal that experienced venture capitalists in Iran prioritize control rights and rights to return streams in their investment contracts. This is

consistent with the broader literature on venture capital contracting, which suggests that control is a critical aspect of venture capital investments, especially in high-risk environments. The study's focus on the Iranian market contributes to the global understanding of venture capital practices by demonstrating that despite the unique challenges and regulatory environment in Iran, the principles of venture capital contracting are similar to those observed in other markets.

Other Relevant Findings Not Directly Related to Structuring Hypotheses

Based on previous studies, the findings seem to indicate that investments based on key performance index (KPI) are considered by venture capitalists to be a major tool to avert moral hazard (Gompers et al., 2020; Wang and Zhou, 2004). We examined whether venture capitalists in Iran resort to this practice. Table 6 shows that 66.7 percent of respondents considered KPI-based investments as either 'essential' or 'important'. Another 25 percent believed that the staging of investments is desirable and only 8.3 percent viewed it as irrelevant. Thus, the proposition that investments based on KPI are commonly used in Iran to minimize the moral hazard is accepted.

Table 6. Venture Capitalists' Preference for the KPI-based Investments

Values	Frequency	Percent	Valid Percent	Cumulative Percent
Essential	13	36.1	36.1	36.1
Important	11	30.6	30.6	66.7
Desirable	9	25.0	25.0	91.7
Irrelevant	3	8.3	8.3	100.0
Total	36	100.0	100.0	

Source: Research findings.

Iranian venture capitalists prefer a flexible policy in structuring investment contracts out of a range of possible policies (Table 7). However, most of them revealed during the discussion that they rarely strike a deal typified by such a flexible policy. Table 7 provides insights into the venture capitalists' preferences for different methods of structuring investment contracts. The table indicates that while venture capitalists prefer a flexible policy in structuring their contracts, they rarely find deals that are characterized by such flexibility. This suggests that while venture capitalists may desire more adaptable contract terms, the reality of their investment deals often requires a more tailored approach. The table also shows that venture capitalists use a range of structuring methods, with the most common being standard contracts, followed by flexible and tailor-made contracts. The least preferred method is having each contract drafted by solicitors, which may be due

to the time and cost associated with this approach. Thus, applying more than one structuring method affords them range, and final contracts are always established after prolonged negotiations.

Table 7. Use of More Than One Structuring Method

	N	Minimum	Maximum	Mean	Std. Deviation
Standard	36	1	4	2.61	.862
Flexible	36	1	4	2.33	.838
Tailor made	36	1	4	2.22	1.017
Each drafted by Solicitors	36	1	4	2.17	.878
Other	36	1	4	1.61	.766

Source: Research findings.

Note: 4 = Essential; 3 = Important, 2 = Desirable; 1 = irrelevant.

Conclusion

The main purpose of this study was to examine the attitudes of venture capitalists toward the structures of their investment contracts on the basis of their characteristics (age, stage of investment, portfolio size). After a period of knowledge-based economic growth during the late 2010s, Iran has seen significant growth in the amount and number of VC funds over the past few years. As Iran's venture capital market has seen significant growth in recent years, understanding the behaviors of venture capitalists within this ecosystem is crucial.

The findings of this research offer significant insights into the venture capital market in Iran, particularly in understanding how venture capitalists' characteristics influence their contractual practices. The study's empirical approach, focusing on 36 venture capitalists, provides a unique perspective on the Iranian venture capital ecosystem, which has seen substantial growth in recent years. Data were collected through structured questionnaires combined with personal interviews, after which these were examined through cluster analysis, ANOVA, and logistic regression.

Academic research on VC divides the investment process into six distinct stages: fund formation, deal generation, screening and evaluation, deal completion, monitoring, and exit (Klonowski, 2010). The present study set out to gain a better understanding of the behaviors of venture capitalists with respect to deal completion. Comparing the findings with existing studies, it is evident that the role of experience in venture capital contracting is a recurring theme. Previous research has shown that experienced venture capitalists tend to have more sophisticated contractual arrangements, which aligns with the findings that experienced Iranian venture capitalists prioritize specific covenants. However, the study also

contributes new knowledge by identifying the particular covenants that are most important to venture capitalists in the Iranian context, which may differ from those in other markets due to local legal and regulatory factors. One of the strong takeaways from this research is the importance of considering venture capitalists' experience and investment preferences when structuring investment contracts.

Although some of the venture capitalists differ in terms of covenants used to complete investment contracts with investees, the vast majority of them choose the approval of borrowing and equity dilution as the most important covenant for countering adverse selection. The entire sample was split into two subgroups based on their responses to explore whether their differences in practice can be linked to demographic backgrounds. The small cluster is almost entirely made up of venture capitalists who have large resources, are more than six years old, and often have many portfolios but invest in late stages.

The ANOVA results indicated that 4 of the 21 covenants studied are scattered in terms of means. The logistic regression verified that fund characteristics collectively affect the approval of auditor appointment, approval of key employees' appointment, liquidation preference and deemed liquidation, importance of proportional board representation, and the approval for treasury operations. The current data highlighted the importance of the first three variables for old funds, which often make up portfolios of investments from late-stage investment companies.

Furthermore, the small cluster members, who are older and have large portfolios, pay more attention to the approval of borrowing and equity dilution in investment contracts than do their counterparts in other clusters. The findings confirmed the hypothesis that the background features of funds affect the covenants that venture capitalists deem important components of an investment contract. For entrepreneurs seeking venture capital funding, the research provides insights into what venture capitalists are likely to prioritize in contract negotiations. This knowledge can help entrepreneurs prepare for discussions and understand the motivations behind venture capitalists' demands for certain contractual provisions. Venture capitalists can also use this information to develop their future investment scenarios and policies related to the sector and stage of future investments. In conclusion, this study provides evidence that the characteristics of venture capitalists and their funds significantly impact the contractual covenants they prioritize in investment contracts. This understanding can inform future investment strategies and policies, guiding venture capitalists as they navigate the evolving landscape of the Iranian venture capital market. Despite the limitations of the

study, including its small sample size and potential response bias, it offers valuable insights into the contracting practices of venture capitalists in Iran and points to areas for further research to deepen our understanding of this dynamic market.

Iran is just witnessing specialized research in VC. Thus, there are many areas that are open for further research. It would be interesting to compare the experiences of entrepreneurs in interacting with venture capitalists. Despite the growth of the VC market in Iran, exits have been very few. Further research is needed to study the impact of these covenants as a means of affecting the success or failure of venture capitalists' exit.

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