



# Determinants of control structure choice between entrepreneurs and investors in venture capital-backed startups

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## ARTICLE INFO

JEL:

G32

D23

G24

Keywords:

Control rights allocation structure

Startups

Entrepreneurs

Venture capitalists

Incomplete contracting theory

## ABSTRACT

This study examines two kinds of control structures in venture capital-backed startups. Based on incomplete contracting theory, we analyze the influence of various factors on these control structures in venture capital models, from the perspectives of investors, entrepreneurs, and startups. In particular, we show how factors such as bargaining power, monitoring costs, private benefits, and risk aversion impact the allocation of control rights. Using the survey data on a heterogeneous group of venture capital-backed startups in China, we empirically examine the impacts of various factors on the control structures of these enterprises. Based on the full sample of enterprises, we find that the stronger the venture capitalist's bargaining power and the higher the monitoring costs, the more likely investors and entrepreneurs are to prefer joint control. Further, the greater the entrepreneur's financing need and private benefits, the more likely investors and entrepreneurs are to choose joint control. High-tech startups are more likely to choose a joint control model than those in traditional industries. This is especially true for high-tech startups at an early stage of development. In addition, for high-tech startups, the probability of choosing joint control shows a negative relationship with investors' strategic benefits and a positive relationship with investors' risk aversion. Regarding startups in traditional industries, investors' strategic benefits and risk aversion have an insignificant impact on their control structures.

## 1. Introduction

Startups at an early stage of development need significant investment support for R & D and innovation. Typically, startups face greater difficulties and higher costs in accessing financing through traditional means and have to turn to venture capital (VC), which has been growing since the 1950s. VC contributes significantly to the development of high-tech startups at an early stage of development (Carvell et al., 2013). For example, in the US, venture capital invests in startups over 15 billion dollars every year (Chen et al., 2011). However, startups' high risk, asymmetric information, and commissioning issues imply that venture capitalists and entrepreneurs must determine the structure of corporate control despite incomplete contracting conditions so as to protect their future. The allocation of control rights has emerged as the key in startup governance with the intervention of VC, and is a key factor in the success of startups.

Previous studies focus primarily on control rights allocation in VC-backed startups, and pay little attention to the resulting control structures in these enterprises. Control structures, as an important tool of corporate governance, not only affect startups' growth and

performance, but also serve as the mechanism and channel through which entrepreneurs and venture capitalists manage total risk. The selection of control structures in startups is the result of the negotiation process between venture capitalists and entrepreneurs, and reflects the purpose of control rights of the two participant parties. It is particularly important for us to understand the role of various factors in determining the control structures in VC-backed startups. Previous research results see the incentives and benefits of venture capitalists and entrepreneurs as important factors affecting control structures. There is a significant discrepancy between startups' risks and the benefits of control rights. While both entrepreneurs and venture capitalists play a critical role in startups, their contributions to these enterprises are difficult to measure. Given the difficulties of data collection, current empirical research concentrates on the description of board seats and votes, etc., under the listed startup VC contract, while there has been little empirical research on the factors affecting the selection of control structures. In addition, previous empirical work in this area focuses primarily on European and US enterprises rather than enterprises in emerging markets.

This paper intends to provide a comprehensive analysis of how

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various factors affect the selection of control structures in VC-backed startups in China, the largest emerging market in the world. More specifically, based on the control right types and structures in startup contracts, we first classify control structures into joint control and contingent control, and describe their characteristics. Second, based on incomplete contracting theory, we analyze the influence of various factors on such control structures in venture capital models, from the perspectives of investors, entrepreneurs, and startups. In particular, we distinguish between two kinds of benefits of control rights, and analyze how the control structure choice is related to control right benefits as well as the bargaining power and control rights demand of various parties.

Third, using the survey data on 193 venture capital-backed startups in China, we empirically examine the factors influencing the selection of control structures in Chinese industries, and reveal how various factors impact the control structure choice in this group of heterogeneous enterprises. It is noteworthy that the risks to venture capitalists in high-tech enterprises and in traditional industries are different. In addition, the private benefits from control rights and the strategic benefits from VC investment in high-tech enterprises and other startups in traditional industries are different. Thus, we divide our sample firms into high-tech enterprises and traditional enterprises, and further analyze whether various factors have a different impact on control structures of startups in high-tech industries and in traditional industries.

We find that the probability of high-tech startups selecting joint control is greater. Entrepreneurs' private benefits, venture capitalists' bargaining power, investment amount, degree of risk aversion, and monitoring cost exhibit a significantly positive relationship with the probability of startups' choice of joint control. Further, high-tech startups at an early stage of development tend to choose joint control while those at later stages of development prefer contingent control structures. Our results indicate that the effects of various factors on the choice of control structures may differ between startups in high-tech industries and those in traditional industries. Our analysis complements the empirical evidence as to various factors affecting control structures in VC firms in developed markets, and helps us understand the heterogeneous control structures observed in VC-backed startups. Our findings also provide insight into the optimal allocation of control rights in different types of startups, and have policy implications for promoting the development and sound corporate governance of these enterprises.

The remainder of this paper proceeds as follows. Section 2 provides a literature review. Section 3 develops the hypotheses based on theories and literature. Section 4 describes the research design and the major variables in the regressions. Section 5 discusses the empirical results, while Section 6 concludes.

## 2. Literature review

### 2.1. Types of startup control structures

According to incomplete contracting theory, control structures refer to the allocation of startup control rights between venture capitalists and entrepreneurs (Wang et al., 2009). Hellmann (1998) is the first to propose two types of control structures—entrepreneur control and investor control. He also analyzes the mechanism through which these control rights could be switched. Hellmann (1998) treats control rights as a discrete variable that takes the value 0 or 1, based on whether unilateral control is vested in the venture capitalist or the entrepreneur. Adapting Hellmann's (1998) theory, Jukka (2002) constructs a contingent control structure for startups under continuous changes, and shows that a contingent control structure is better than other types. Schmidt (2003) explores contingent control structures in practice, and describes the method of implementing contingent control via convertible securities. By combining unilateral control and contingent control,

Cestone (2014) proposes a shared contingent governance structure of control rights, which combines the concept of contingent control and joint control by investors and entrepreneurs. de Bettignies (2008) sums up extant unilateral control, contingent control, as well as shared contingent control, and designs three dependent control right configuration structures based on an incomplete contracting model, i.e., entrepreneur control, investor control, and joint control. de Bettignies (2008) studies the application of financing tools such as common stock, preferred stock, convertible preferred stock, secured loans, and unsecured loans in control rights configuration contracts. Xiong (2010) puts forth a third type of control mechanism that combines unilateral control and bilateral control to offset the negative impact of adopting only one method, to achieve better control performance. In addition, Fluck (2010) studies the relationship between control rights, incentive motivation, and entrepreneurship, and examines two control structures—contingent control and unconditional control. Unconditional control is basically consistent with joint control. Andrieu (2012) focuses on striking an optimum balance between a venture capitalist's control rights and an entrepreneur's control rights. After comparing the factors influencing control structures under an independent venture capital model and bank-/public-funded venture capital model, Hirsch and Walz (2013) proclaim that the differences between them under VC models are less than under other intervention mechanisms. Ma et al. (2013) analyze the application and performance of three types of binary right structures under a joint investment model, and propose that the rights and statuses of venture capitalists and entrepreneurs should be matched in such models.

Based on the literature, we understand that startup control structures can be classified as unilateral control, contingent control, and joint control. Both contingent control and unilateral control can be defined as a discrete variable that takes the value of 0 or 1. Unilateral control refers to the control rights of either the venture capitalist or entrepreneur, while contingent control depends on whether a random variable (signal) can be realized in the future. Either the startup entrepreneur or the venture capitalist first owns the control rights and then reassigns it according to observable corporate signals (Fluck, 2010; Masulis and Nahata, 2009). Unilateral control by entrepreneurs or venture capitalists is a special case of contingent control. Therefore, unilateral control in this paper is classified as a part of contingent control, and the startup corporate control structure in a VC model is mainly divided into contingent control and joint control. In the following sections, this paper will combine the theoretical analysis of startup joint control and contingent control to discuss the main factors that affect the selection of control structure.

### 2.2. Factors influencing startup control structure

Most studies examining the factors that influence corporate control structures have concentrated on venture capitalists, entrepreneurs, and startups (Chen et al., 2014). As far as venture capitalists are concerned, the chief factor is the venture capitalist's risk attitude. Cumming and Johan (2007) find that the suggestions proposed by venture capitalists for hedging risks can significantly facilitate the efforts of entrepreneurs. This is necessary to endow venture capitalists with more cash flow and proportionate control rights to encourage them to provide valuable advice and suggestions. Tan et al. (2008) measure venture capitalists' monitoring cost and risk aversion cost by the time they spend on inspecting entrepreneurs. They find that venture capitalists' risk attitudes affect their selection of control structures. This then leads to the second factor affecting their choice, which is the cost venture capitalists pay to hedge risks. Focusing on venture capitalists' risk perception, Antonczyk and Salzmann (2012) find that venture capitalists' risk attitudes and risk aversion affect their risk perception, and by controlling other factors during empirical research, they also find that risk perception affects venture capitalists' appeal for corporate rights. Venture capitalists' risk attitudes and the actions they take to mitigate

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