

# The Influence of the Venture Capitalist's Governance Activities on the Entrepreneurial Firm's Control Systems and Performance

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Venture capitalists (VCs) contribute to entrepreneurial firms by engaging in governance activities, such as providing services and monitoring the entrepreneurial firm's operations and performance. This study examines the role and influence of the VC's governance activities on 93 Dutch entrepreneurial firms. Results suggest that while the VC's governance activities may help to stimulate the use of the entrepreneurial firm's control systems, they also moderate the relationship between the entrepreneurial firm's use of control systems and its financial performance. It appears in particular that cost control systems contribute positively to the entrepreneurial firm's financial performance when the VC provides service activities. However, the use of cost control systems tends to be negatively related to the entrepreneurial firm's financial performance when the VC is highly focused on monitoring.

## Introduction

Venture capitalists (VCs) provide risk capital to high-potential entrepreneurs. By owning a large stake of the ownership rights, VCs usually gain substantial influence over the entrepreneurial firm, which allows them to play an active role in the firm's strategy development by offering value-adding activities. Although seminal work has reached general consensus as to which value-adding activities are provided to entrepreneurial firms (e.g., Deakins, O'Neill, & Mileham, 2000; Ehrlich, Noble, Moore, & Weaver, 1994; Fried, Bruton, & Hisrich, 1998; Gabrielsson & Huse, 2002; Gorman & Sahlman, 1989; MacMillan, Kulow, & Khoylan, 1989; Rosenstein, Bruno, Bygrave, & Taylor, 1993; Sapienza, 1992; Sapienza & Timmons, 1989), there is still little agreement on the extent

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to which these activities influence the entrepreneurial firm's performance (Barney, Busenitz, Fiet, & Moesel, 1996; Busenitz, Fiet, & Moesel, 2004; Flynn, 2001; Higaside & Birley, 2002; Rosenstein et al., 1993; Sapienza, Manigart, & Vermeir, 1996).

Previous research on the impact of VCs has mainly focused on direct effects of the VC's value-adding activities on the one hand, and the entrepreneurial firm's features and financial performance on the other hand. Little work has been done to investigate these relationships in a more complex manner, such as considering the impact of moderating mechanisms through which the VC may enhance or damage the entrepreneurial firm's financial performance. This article attempts to resolve the "VC added value" problem from a corporate governance point of view by proposing that the contribution of the VC's value-adding activities to the entrepreneurial firm's performance depends on the way the VC tries to govern the entrepreneurial firm. As such, the value-adding activities provided by the VC's representatives on the board, the investment manager, and all other VC staff who are involved with the entrepreneurial firm combined, are regarded as the VC's governance activities. Accordingly, two main sets of VC's governance activities can be distinguished, which are related to agency theory and resource dependency theory (Daily, Dalton, Johnson, & Ellstrand, 2003; Hillman & Dalziel, 2003; Zahra & Pearce, 1989). The first comprises the VC's monitoring activities that arise from the VC's perception of an agency problem, which occurs when the entrepreneurial firm's management possesses more or better information than the VC and when there is a mismatch between the goals and interests of the two parties (see e.g., Cable & Shane, 1997; Jensen & Meckling, 1976; Lynall, Golden, & Hillman, 2003; Sapienza, Korsgaard, Goulet, & Hoogendam, 2000). The second comprises the VC's service activities that result from an asymmetric resource-dependency relationship between the VC and the entrepreneurial firm. This implies that the viability and continuity of the entrepreneurial firm depends on critical resources controlled by the VC (see e.g., Johnson, Daily, & Ellstrand, 1996; Pfeffer & Salancik, 1978). This article takes into account that due to the VC's information needs and experience with many other firms, each governance activity influences the degree of sophistication of control systems in the entrepreneurial firm, albeit for a different purpose. The VC's monitoring activities are aimed at value protection, while the VC's service activities are aimed at value creation.

A resource-dependency perspective suggests that sophisticated control systems enable the entrepreneurial firm to grow and expand more quickly (see also Churchill & Lewis, 1983; Flynn, 2001) as they promote efficient and effective use of the resources provided by the VC to the entrepreneurial firm. Accordingly, when sophisticated control systems are present in the entrepreneurial firm, the VC should be able to align its governance activities to the information or resource needs revealed by these systems, and hence create value. Therefore, the VC's service activities may not only have an impact on the degree of sophistication of the entrepreneurial firm's control systems, but also moderate the effect of such systems on the entrepreneurial firm's financial performance. An agency theory perspective suggests that sophisticated control systems in the entrepreneurial firm facilitate the ability of the VC to protect the value of its investment (cf. Ruhnka & Young, 1987), as VCs tend to be short-term and efficiency-oriented investors (Gomez Meija, Balkin, & Welbourne, 1990; Steier & Greenwood, 1995; Zahra, 1996b). However, given the potentially negative effects of too much control, we expect that VC monitoring activities might negatively moderate the effect of the entrepreneurial firm's control systems on its financial performance.

This article proceeds in the following manner. First, we explore the contribution of the VC to the entrepreneurial firm from an agency theory and resource-dependency theory perspective. Next, we provide information about our sample, measures and statistical

procedures. Finally we report the results, and conclude with a discussion of the implications of our findings.

## Theory and Hypotheses

### Resource-Dependency Perspective: VC's Service Activities and the Entrepreneurial Firm's Control Systems

Resource-dependency theory suggests that corporate boards, and thus VCs, are effective mechanisms which help the firm to manage external resource dependencies (Pfeffer & Salancik, 1978). As such, VCs play the role of "boundary spanners" (cf. Daily et al., 2003, p. 372) between the firm and its environment by providing or facilitating access to external resources which are critical to the entrepreneurial firm's success. Apart from their help to access and develop networks with other external organizations (e.g., suppliers, customers, investors, and regulatory agencies), VCs contribute by using their information expertise and cognitive capabilities to enhance the comprehension, creativity, and coherence of a firm's decisions (cf. Ginsberg, 1994). In this context, VCs reduce the entrepreneurial firm's uncertainty regarding control of resources, strategy development, and transaction costs related to external relationships (cf. Hillman, Cannella, & Paetzold, 2000). Several studies in the corporate governance literature recognize the added value of service activities, such as the provision of access to key constituents (e.g., investors, advisors, and regulatory agencies), tangible resources as well as information, advice, legal counsel, and legitimacy (Fried et al., 1998; Hillman et al., 2000; Judge & Zeithaml, 1992). Very much in line with these findings regarding the contribution of corporate boards, research into the VC's postinvestment activities indicate that VC service activities include recruiting additional managers to the firm, acting as the interface with the investor group, providing assistance on operations, helping to approach new finance partners, establishing contacts with advisors, or providing assistance for the introduction of new products/services to the market (e.g., Ehrlich et al., 1994; Gabrielsson & Huse, 2002; Harrison & Mason, 1992; MacMillan et al., 1989; Rosenstein et al., 1993; Sapienza & Timmons, 1989). From a resource-dependency perspective, the main goal of these service activities is to enhance or facilitate the implementation of corporate decisions through the flow of critical resources to the entrepreneurial firm.

The resource-dependency perspective indicates that powerful coalition partners of the organization, such as VCs, who provide resources, capabilities, and advice that are most needed or desired by the organization, have influence and control over the organization (Pfeffer & Salancik, 1978, p. 27). One way to establish the VC's influence and control over the entrepreneurial firm is to stimulate the use of control systems. These control systems might enhance the importance of the VC as a powerful partner in the entrepreneurial firm, as control systems can help to identify potential behavior, resources, and capabilities that are most appropriate and might be supplied by the VC. Moreover, they can help the entrepreneurial firm to use its resources in an efficient and effective manner.

While entrepreneurs tend to be particularly oriented toward the primary processes of the firm, the VC's expertise in cost control may help the entrepreneurial firm to operate more efficiently (Flynn, 2001). As a dominant partner in the entrepreneurial firm, the VC is likely to emphasize the importance of efficient operations and demand a tight discipline of procedures in order to direct the entrepreneurial firm to relatively short-term (financial) goals, such as to prepare it for floatation or to require above-average minimum dividend payments (Gomez Mejia et al., 1990), or to deal with competitors (Berry & Perren, 2000). Pfeffer and Salancik (1978, p. 13) argue that information systems that are dominant in an

organization shape its decision-making processes and outcomes. Not only do they indicate what the organization considers to be important, they also highlight organizational constraints. Cost control systems enable the entrepreneurial firm to capture its cost structures, as well as improve its plant efficiency and its competitiveness in the market. Following this line of reasoning, valuable service activities provided by the VC may influence the effectiveness of the entrepreneurial firm's use of control systems. This leads to

**Hypothesis 1:** The degree of VC service activities is positively associated with the degree of sophistication of a cost control system in the entrepreneurial firm.

The effectiveness of highly skilled employees can be enhanced when they are motivated to perform (Huselid, 1995). Storey (2002) refers to the relationship between firm performance and high-performance work systems and discusses the possibility that, for smaller firms (compared to Huselid's study), HR practices collectively are associated with better performance. In this respect we could think of issues like job design, rewards, and compensation as well as feedback (see Zimmerer & Scarborough, 2002). In the following, we refer to these issues as incentive and reward systems. These systems not only aim at increasing employees' motivation, they also serve to reduce shirking and enhance the retention of quality employees while encouraging nonperformers to leave the firm (Huselid, 1995). It is in the best interest of the VC as a powerful coalition partner to ensure that the payoff structures of the entrepreneurial firm's management and its employees align with the organizational goals (the VC desires). Consequently, the VC and its appointed directors are able to add value by developing or reviewing the appropriateness of the entrepreneurial firm's system of performance measurement and compensation. Indeed, Flynn (2001) finds that VCs tend to introduce formalized personnel appraisals to entrepreneurial firms. Consequently, we expect that VC service activities are positively related to the functioning of incentive and reward systems in entrepreneurial firms. This leads to

**Hypothesis 2:** The degree of VC service activities is positively associated with the degree of sophistication of an incentive and reward system in the entrepreneurial firm.

The information provided by the control systems described previously can be used by the entrepreneurial team and the VC to decide how to deal with internal and external environmental pressures, and help them make vital decisions about resource acquisitions. As discussed, control systems are likely to influence decision-making processes and outcomes of the entrepreneurial firm and, at the same time, may define the boundaries in which the entrepreneurial firm is allowed to operate. Cost control systems may generate information about how chosen cost objects (e.g., products, services, or operations) absorb the resources of the entrepreneurial firm, and constrain the entrepreneurial firm in the use of particular resources. Incentive and reward systems may help to ensure that the interests of individuals or groups in the entrepreneurial firm align with organizational goals.

We suggest that the presence of both types of control systems is likely to become more important to the entrepreneurial firm when there is an implementation fit between the information provided by these systems and the services provided by the VC. In other words, we expect that the contribution of cost control systems or incentive and reward systems to the entrepreneurial firm's performance is conditional upon the contribution of the VC's service activities. This is because the VC is likely to possess necessary resources that are needed to fill the resource gaps or is able to alleviate weaknesses revealed by these systems (Wijbenga, Postma, van Witteloostuijn, & Zwart, 2003). For instance, when cost systems indicate that operational costs are higher than expected, the VC may provide assistance for operations or provide advisors to the entrepreneurial firm. Or, when certain

managerial targets are not met, e.g., sales targets for new products, the VC may provide assistance to introduce these new products effectively, or simply decide to recruit additional managers to the entrepreneurial firm who are more suitable to do these tasks than the present managers. Similarly, when incentive and reward systems show that managers and/or personnel are not optimally motivated, the VC might offer advice or induce corrective action. In the value-creating process the VC plays a catalytic role by adjusting the resources, capabilities and advice it supplies to the strengths and weaknesses of the entrepreneurial firm (Wijbenga et al., 2003). The control systems support this process by disclosing vital information about the degree and nature of the entrepreneurial firm's strengths and weaknesses. Therefore we hypothesize:

**Hypothesis 3:** The VC service activities positively moderate the effect of the entrepreneurial firm's control systems on its financial performance.

### **Agency Theory Perspective: VC's Monitoring Activities and Control Systems**

The agency theory perspective suggests that principals, such as VCs, use incentives, punishments, bonding, and managerial processes to align interests and monitor the agents' actions (see also Chrisman, Chua, & Litz, 2004). Agency theory fosters a control approach of governing the firm, which emphasizes results-oriented management and accountability of the entrepreneurial team. The agency perspective adopted by VCs is aimed at safeguarding their investment and exerting control over the firm through monitoring and reducing goal conflict by tying the entrepreneurial team's rewards to firm performance. Goal conflicts may exist on issues such as valuation of stock, attitudes to risk, strategic goals, allocation of resources, risk management, and exit timing. Under conditions of asymmetric information and divergent interests between principals and agents, agents might engage in opportunistic behavior which leads to the inefficient use of resources and the exploitation of the principals (Williamson, 1988a), e.g., due to poor strategic decision making or managerial shirking, as well as excessive expenditure, for instance for managerial perquisites (Ang, Cole, & Lin, 2000). By monitoring the entrepreneurial firm's financial and operational performance and developing incentive structures, VCs may alleviate some of the information gaps and incentive problems.

Agency theory suggests that corporate boards can play an important role in the development and implementation of monitoring mechanisms for the control of management (Fama & Jensen, 1983; Walsh & Seward, 1990; Weir, Laing, & McKnight, 2002), e.g., by evaluating strategic initiatives and appointing, disciplining or removing ineffective individual managers or management teams (Barnhart, Marr, & Rosenstein, 1994). In line with these findings, several studies on the VC's postinvestment activities indicate that VC monitoring activities include the monitoring of financial and operational performance, and the evaluation of the entrepreneurial firm's business strategy and product–market opportunities (Ehrlich et al., 1994; Gabrielsson & Huse, 2002; Harrison & Mason, 1992; MacMillan et al., 1989; Rosenstein et al., 1993; Sapienza & Timmons, 1989).

Entrepreneurs who fail to contribute to or comply with these monitoring activities may eventually be disciplined or even fired (Barnhart et al., 1994). Through their monitoring activities, VCs ensure the implementation and use of the entrepreneurial firm's control systems that are aimed at safeguarding and increasing efficiency, productivity, and profitability. In doing so, the VC forces the entrepreneurial firm to use the information provided by its cost control systems when reviewing its strategy formation and

implementation, and to make judgments about established objectives and proposed policies for change. This view of the VCs monitoring efforts lead to

**Hypothesis 4:** The degree of VC monitoring activities is positively associated with the degree of sophistication of a cost control system in the entrepreneurial firm.

Another focus of agency theory is the development and implementation of managerial incentive systems, both with respect to managerial remuneration and ownership (Hillman & Dalziel, 2003; Walsh & Seward, 1990; Weir et al., 2002). One can argue that through their monitoring activities, VC may enhance the use and effectiveness of incentive and reward systems such as formal job analysis, performance appraisal and incentive plans. The presence of financial incentives serves to help the VC motivate the entrepreneurial team and to avoid conflicts of interest by aligning the interests of the entrepreneurial team to those of the VC (Gompers & Lerner, 2000, p. 131). Relevant monitoring activities, with regard to incentive and reward systems, are clarifying responsibilities, constructive criticism, outside objectivity (see Berry & Perren, 2000; Deakins et al., 2000), as well as providing advice on appropriate incentives. The latter is particularly important as research indicates that many incentive systems which focus on managerial remuneration and ownership have unintended consequences on the motivation of managers—such as encouraging the manipulation of financial reports or discouraging managers to take risks—and might promote managerial entrenchment (Beatty & Zajac, 1994; Core, Wayne, & Larcker, 2003; Hubbart & Palia, 1995; Walsh & Seward, 1990). Therefore we expect

**Hypothesis 5:** The degree of VC monitoring activities is positively associated with the degree of sophistication of an incentive and reward system in the entrepreneurial firm.

However, it is important to remember that the agency costs of monitoring, bonding and residual losses are partly both complementary and substitutive in nature (Jensen & Meckling, 1976). While monitoring and bonding activities can lead to a reduction of residual losses, these activities themselves at the same time create both set-up and operating costs (Williamson, 1988a, 1988b). As a consequence, the cumulative use of various monitoring and bonding activities can lead to an increase in total agency costs. Particularly with reference to the debate about the impact of corporate governance mechanisms on corporate performance, research indicates that substitutional effects are likely to exist between internal and external mechanisms of corporate governance (Walsh & Seward, 1990; Weir et al., 2002), such as managerial ownership, outside block ownership, control by banks, capital structure, managerial remuneration, financial reporting and control, as well as board structure (Beatty & Zajac, 1994; Hermalin & Weisbach, 2003; Weir et al., 2002). Consequently, we suggest that when VCs focus closely on monitoring, and various control mechanisms are already present in the entrepreneurial firm, an unnecessary duplication of (similar) efforts might occur.

If management teams engage in bonding activities, the principals' use of additional, substitutive, internal corporate governance mechanisms for supervision and control might not only lead to a needless inflation of agency costs for the establishment and operation of these mechanisms. As bonding activities are an attempt to signal trustworthiness, the insistence of principals on further control might be interpreted as a signal for distrust of investors. Roberts, McNulty, and Stiles (2005) suggest that this can give rise to low management morale and attempts by managers to inhibit the functioning of internal corporate governance mechanisms, e.g., via the manipulation of information. This might consequently damage firm performance and investors' ability to safeguard their investment.

If nonexecutive directors deal with relational risk by focusing on the use of control mechanisms mainly because they are suspicious of management, the consequential development of distrust between boards and managers is likely to reduce the ability of directors to contribute to strategy development and resource access (Roberts et al., 2005). This is because managers are becoming more concerned with justifying their managerial decisions to the board rather than using the directors' expertise and contacts to improve firm performance (Sundaramurthy & Lewis, 2003). Landström (1993) in particular criticizes the narrow focus on potential agency conflicts adopted by VCs, pointing out that monitoring mechanisms are likely to be counterproductive as they lower the level of trust between the VC and the entrepreneur. This also means that the principals' and agents' perception of the risk of opportunistic behavior and the appropriateness of the control systems is of great importance (Arthurs & Busenitz, 2003; Busenitz et al., 2004). If VCs overestimate the extent of agency problems, they might not only waste precious resources in developing and implementing superfluous monitoring mechanisms, they might also damage the firm's performance by inhibiting the management team from utilizing their and the VCs' abilities and resources to the fullest potential. This implies that the VCs' monitoring activities are likely to have a negative effect on the relationship between both types of control systems and on firm performance. These findings and arguments lead to

**Hypothesis 6:** VC monitoring activities negatively moderate the effect of the entrepreneurial firm's control systems on its financial performance.

## Methodology

### Sample and Data Collection Procedure

We sent questionnaires to 441 Dutch venture capital-backed small and medium-sized enterprises (SMEs), which we identified from the Reach database (e.g., capturing business information from the Dutch Chambers of Commerce), annual reports, and Internet sites of VCs. SMEs are defined as firms employing 250 people or less (this conforms to the EU definition, see also Nooteboom, 1994). Seed-stage companies (because they have no financial performance record) and firms already listed on the stock market (because the VC is about to exit these companies) were excluded. The mail survey produced 93 usable questionnaires. The net-response rate is about 21%. Two Kolmogorov-Smirnov 2-sample tests provide strong evidence (i.e., the asymptotic significance [2-tailed] is .940 for the firm's age and .477 for the firm's industry) that the respondent firms and the nonrespondent firms come from the same distribution (e.g., shape, central tendency, and so forth). For the latter test, 34 firms were classified as ICT/life sciences firms, whereas 25 and 34 are classified as services/sales and manufacturing firms, respectively.

Dutch VCs, like most of their European colleagues, do not solely invest in new ventures, but also back more established SMEs who also receive growth financing (for more details see: Sapienza et al., 1996). When defining new ventures as firms that have been in existence for 8 years or less (Zahra, 1996a), our sample has 45 new ventures and 48 more established SMEs. Storey (1994, p. 223) finds that rapidly expanding small firms are particularly attractive to VCs, as they offer the prospect of capital gains. This is consistent with the reasons for funding indicated by the 48 SME entrepreneurs of our dataset. Namely, 26 report to receive venture capital to expand their business, 18 for acquiring an existing product line or business (management buyout), three for bridge financing, and one for a turn around. We have checked all our results regarding our hypotheses to see whether there would be any differences in our findings between new ventures *vis-à-vis* the more established SMEs. We do not find any differences. This is

consistent with the logic behind the stages of development models (see also Churchill & Lewis, 1983; Scott & Bruce, 1987), which suggest that a firm regardless of its age must establish control systems when it wants to grow. In line with this, Flynn (2001) finds that VCs emphasize various control systems for both early stage (seed or start-up) and later stage investments (mezzanine or bridge investments).

## Measures

**Financial Performance.** The entrepreneurial firm's financial performance is measured by a composite performance scale, which is based on studies of Manigart, Sapienza, and Vermeir (1995) and Sapienza et al. (1996). The scale has a high disclosure rate, a strong internal consistency, and a relatively strong inter-rater reliability (Chandler & Hanks, 1993). Previous studies comparing VCs' and CEOs' assessments prove this measure to be highly reliable and valid (Sapienza, 1992; Sapienza & Gupta, 1994). The *financial performance* measure comprises: (1) sales growth; (2) market share; (3) gross margin; (4) return on investment; (5) market value company shares; and (6) liquidity position. For each item, the entrepreneur's satisfaction score is multiplied with a corresponding importance score (Zahra, 1996a). The importance items are measured using a Likert scale from 1 = not important, to 6 = very important, and the satisfaction scores with 1 = not satisfied, to 6 = very satisfied. The scales are calculated by dividing the sum of items' weighted scores through the sum of the number of items. Cronbach  $\alpha$  is .76.

**VC Governance Activities.** The items of the scales with respect to the VC's *service activities* and the VC's *monitoring activities* are based on previous studies (Ehrlich et al., 1994; Harrison & Mason, 1992; MacMillan et al., 1989; Rosenstein et al., 1993; Sapienza & Timmons, 1989). The entrepreneurs are asked to indicate the intensity by which they agree or disagree with a number of propositions about the value-adding activities provided by their VC(s). The propositions are measured by using a Likert scale from 1 = fully disagree, to 5 = fully agree. The service activities include recruiting additional managers to the firm, being the interface with the investor group, providing assistance for operations, helping to approach new finance partners, establishing contacts with advisors, and providing assistance for the introduction of new products/services to the market. The VC monitoring activities include monitoring financial and operational performance, and the evaluation of the entrepreneurial firm's business strategy and product market opportunities. Both groups of activities can be distinguished and separated in the factor analysis we performed on the items related to the VC's governance activities (see the Appendix for the results of the factor analysis). The two VC-governance scales are subsequently computed by dividing the total sum of the item scores by the number of items. The Cronbach  $\alpha$  of the VC service activities is .76, and the Cronbach  $\alpha$  of VC monitoring activities is .80.

**Entrepreneurial Firm's Control Systems.** The Appendix provides an overview of the scales analysis and discriminant validity of the entrepreneurial firm's control systems.<sup>1</sup>

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1. The factor structures mainly support the discriminant validity of the scales. For the factor analysis of the items for the cost control system and the incentive and reward system it appears that the item "performance appraisals determine compensations" loads negatively high on the cost control factor. This is not surprising given the general purpose that underpins the reason-of-being of cost control systems in firms, namely controlling and mitigating the firm's costs and expenses. Moreover, the item "average costs bringing products to market as a percentage of sales over the last three years (reverse coded)" loads in turn negatively high on

The items of the *cost control system* scale are based on a study by Miller (1988). The entrepreneurs are asked to rate how important each item is for their company by using a Likert scale from 1 = not important, to 7 = very important. The scale is calculated through summing the item scores, and then dividing the total sum by the total number of the items. Cronbach  $\alpha$  is 0.60, which is just above the lower limits of acceptability of 0.60 for exploratory research (Hair, Anderson, Tatham, & Black, 1998, p. 118).

The items of the company's *incentive and reward system* are derived from an exploratory study of Huselid (1995) on high-performance work practices regarding the way firms pursue their strategic human resource management practices. For the scale's items the entrepreneur had to indicate the percentage of his/her workforce for whom the particular work practices accounts. To measure the sophistication of the incentive and reward system, the scale is computed by the sum of the items divided by the number of the items. The Cronbach  $\alpha$  of *incentive and reward system* is .68.

**Control Variables.** We take the following control variables into account: the *firm's age*, the *firm's size*, the *entrepreneur's tenure*, and two industry dummy variables, i.e., *ICT/life science industries*, and *services/sales industries*.<sup>2</sup> These covariates take into account that VCs tend to be more involved in younger and smaller firms, and firms operating in emergent industries (Elango, Fried, Hisrich, & Polonchek, 1995), and managers with a lower tenure in the firm (Barney et al., 1996).

**Common Method Variance.** Our analyses may suffer from a common-method bias, as a result of the single-respondent survey that produced all our data. However, Harman's single-factor test (see also Podsakoff, MacKenzie, & Lee, 2003) provides evidence that the analyses are not unduly subject to a common-method bias. This is because the scales we used have overtly different items and the scaling method used to obtain the scale for incentive and reward system is substantially different from the performance scales—i.e., percentage scores versus Likert scales (see also Harrison & McLaughlin, 1996). Additionally, the questionnaires guaranteed the respondents' anonymity and it presented the dependent constructs prior to the independent constructs, which is seen as a good remedy for common-method bias (see Podsakoff et al., 2003 for strategies to reduce common-method variance).

## Data Analysis

It is possible that there are reciprocal effects between the independent variables and the dependent variables. For example, it can be argued that firms who employ cost control systems or incentive and reward systems are particularly inclined to value VCs monitoring activities highly, because the information obtained from these systems is likely to influence the amount of value-adding activities offered to the entrepreneurial firm (which illustrates the possible existence of a feedback loop). If a simultaneity bias exists with regard to our test for a particular hypothesis, 2-SLS (two-stage least squares) estimation techniques have to

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the incentive and reward system. In the very line and nature of agency theory, it is plausible that possible gains of uncertain activities with a high information asymmetry like introducing new products to the market are linked to the personal incomes of the entrepreneurial team and/or other key people in the firm. So, we conclude that both items in fact do not harm the discriminant validity of the constructs, they merely show that to some extent the constructs are logically connected with each other.

2. This implies that firms that are simultaneously dummy coded as 0 for ICT/life science industries and 0 for services/sales industries operate in the manufacturing industries.

be applied. When this bias is not present, OLS (ordinary least squares) regression estimation techniques have to be used (Berry, 1984).

A Hausman (1978)–Wu (1973) test is performed to assess whether such endogeneity problems lead to biases when using OLS estimation techniques under the null hypothesis that the OLS model is correctly specified. For the VC service activities we have the instrumental variables frequency of contact with the VC (which correlates .24 [ $p = .02$ ] with VC service activities) and the number of VCs involved with the entrepreneurial firm (which correlates .41 [ $p = .00$ ] with VC service activities). We suggest that these two instrumental variables are likely to influence the value added of the VC service activities. VCs who spend more time with the entrepreneurial team are more likely to become keen on assessing what services are needed for the entrepreneurial firm than VCs who spend little time with the entrepreneurial team. Moreover, more involvement with the venture may signal the VC's commitment to the entrepreneurial firm, and therefore enhance trust between the two parties, which facilitates a greater receptivity of the VC service activities by the entrepreneurial firm (see also Jap, 2001). Additionally, the number of VCs involved in the entrepreneurial firm is likely to influence the value added of VC service activities positively. The entrepreneurial firm will benefit from the interlocking directorships and networks brought in by additional VCs and allow it to secure further critical resources and develop and maintain long-term relationships (see also Westphal, 1999). A hierarchical analysis shows that these instruments explain a significant amount of the variance of the VC's service activities ( $F$  change = 5.21;  $p < .01$ ), which indicates that the instruments are sufficiently strong. The results of the Hausman–Wu test show that the null hypothesis is supported for cost control systems (hypothesis 1), unsupported for incentive and reward systems (hypothesis 2), and supported for financial performance (hypothesis 3<sup>3</sup>). This means that we have to use 2-SLS estimation techniques<sup>4</sup> for analyzing hypothesis 2, and OLS for hypotheses 1 and 3.

For the VC monitoring activities we have the instrumental variables frequency of contact with the VC (which correlates .43 [ $p = .01$ ] with VC monitoring activities), and the invested amount by the VC (which correlates .32 [ $p = .00$ ] with VC monitoring activities). We suggest that these are valid instruments, as the frequency of contact with the entrepreneurial firm is likely to affect the VC's proficiency to monitor the entrepreneurial firm adequately, and the invested amount by the VC is likely to increase

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3. Possible reverse effects could also exist with respect to the relationships between the VC service and monitoring activities and the entrepreneurial firm's financial performance (which is relevant for testing hypotheses 3 and 6). Entrepreneurial firms with a high financial performance may be more inclined to value the VC's monitoring and service activities positively than entrepreneurial firms with a poor financial performance. When such reverse effects are present in the data, OLS results may lead to biases (i.e., a simultaneity bias) in the beta coefficients (Berry, 1984). The Hausman (1978)–Wu (1973) test shows that there is no simultaneity bias with respect to the financial performance measure in our data, so the use of OLS does not lead to biases in the regression estimates. Moreover, a spurious effect may arise in the relationship between the VC's governance activities and the entrepreneurial control systems when poor performance would influence the VC's decision to provide control systems to the entrepreneurial firm. A hierarchical analysis, in which the financial performance measure is added to the second step of the regression equation concerning the relationship between the VC's governance activities and the control systems, shows that there is not such an effect present in our data. That is, there are no changes in the semi-partial regression coefficients of the control systems when the financial performance measure is added to the equation.

4. We performed two Sargan tests (see also Stewart & Gill, 1991, p. 143) in order to verify the overall validity of the instruments for the 2-SLS estimation (i.e., those for testing hypotheses 2). The null hypothesis states that the selected instruments are appropriate to be accepted. Concerning hypothesis 2 the Sargan test has a chi-squared score of .00. This value is well below the 5% critical value of 5.99, which means that the null hypothesis is supported.

the VC's incentive to monitor the entrepreneurial firm thoroughly. A hierarchical analysis shows that these instruments explain a significant amount of the variance of the VC's monitoring activities ( $F$  change = 11.23;  $p = .00$ ), which indicates that the instruments are sufficiently strong. The results of the Hausman (1978)–Wu (1973) test show that the null hypothesis is supported for cost control systems (hypothesis 4), unsupported for incentive and reward systems (hypothesis 5), and supported for financial performance (hypothesis 6). This means that we have to use 2-SLS estimation techniques<sup>5</sup> for analyzing hypothesis 5, and OLS for hypotheses 4 and 6.

In short, the previous analysis has dealt with the reverse causality problem. For all our hypotheses the nonrecursivity assumption of OLS will not be violated. So, feedback loops than run from the incentive and reward systems to the VC monitoring activities (hypothesis 2) and the VC service activities (hypothesis 5) are kept outside our subsequent regression analyses. According to the Hausman (1978)–Wu (1973) tests, similar feedback loops do not exist regarding the other hypotheses.

## Results

Summary descriptive statistics and pairwise Pearson correlations are provided in Table 1. The mean of the entrepreneurial firm's age of 21.87 years is slightly upwardly biased, due to the fact that there are some substantially older firms present in the sample (e.g., the oldest firm is 170 years old). The median age of the entrepreneurial firms is 9 years. Consistent with the study of Elango et al. (1995), the VC service activities have a high negative correlation with firm size ( $p < .05$ ), firm age ( $p < .05$ ), and a positive correlation with ICT/life sciences firms ( $p < .01$ ). The latter may be explained by the VC's interest in reducing information asymmetry in dynamic environments (Amit,

Table 1

Descriptive Statistic and Pearson Correlations

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. Firm age	21.87	31.25	—									
2. Firm size	49.47	56.99	.52**	—								
3. Tenure entrepreneur	7.62	8.08	.38**	.12	—							
4. ICT/life science industry	n.a.	.48	-.31**	-.07	-.14	—						
5. Service/sales industry	n.a.	.45	-.03	.07	-.16	-.46**	—					
6. Cost control system	4.13	.95	.27*	.17	.01	-.30**	.22*	—				
7. Incentive and reward system	63.52	23.76	-.11	.15	.05	.33**	-.23*	-.19	—			
8. VC service activities	1.85	.74	-.22*	-.21*	-.27**	.29**	-.22*	-.23*	.19	—		
9. VC monitoring activities	2.67	.95	-.16	-.16	-.11	.35**	-.14	.09	.21*	.42**	—	
10. Financial performance	12.59	3.82	.15	.21*	-.09	-.19	.11	.09	.11	-.14	-.13	—

\*  $p < .05$ ; \*\*  $p < .01$ .

VC, venture capitalist.

5. Concerning hypothesis 5, the Sargan test has a chi-squared score of .01. This value is well below the 5% critical value of 5.99, which means that the null hypothesis is supported. The two instruments for VC monitoring appear to be appropriate.

Brander, & Zott, 1998). Furthermore, Table 1 shows that VC monitoring activities have a positive correlation with the entrepreneurial firm's incentive and reward systems ( $p < .05$ ). Counter to our expectations, VC service activities have a negative correlation with the entrepreneurial firm's cost control system ( $p < .05$ ). Finally, there is a positive correlation between both types of board activities ( $p < .01$ ), which is consistent with MacMillan et al.'s (1989) active and passive VC involvement types.

Tables 2 and 3 show the regression equations that are computed to test our hypotheses. The interaction effects of hypotheses 3 and 6 are tested with hierarchical moderated

Table 2

The Effect of the Venture Capitalist (VC) Governance Activities on the Entrepreneurial Firm's use of Control Systems

	Equation 1 OLS results Cost control systems	
Intercept <sup>†</sup>	$\beta$ **	s.e. (.42)
Firm age	.22*	(.00)
Firm size	.05	(.00)
Tenure entrepreneur	-.13	(.01)
ICT/life science industry	-.23	(.25)
Services/sales industry	.08	(.25)
VC service activities	-.27*	(.15)
VC monitoring activities	.33**	(.12)
<i>F</i> -statistic	3.60**	
R <sup>2</sup>	.25	

	Equation 2: 2-SLS results <sup>‡</sup> Incentive and reward system	Equation 3: 2-SLS results Incentive and reward system
Intercept <sup>†</sup>	$\beta$ (29.71)	s.e. (20.49)
Firm age	-.21 (.12)	-.24 (.12)
Firm size	.43** (.07)	.43** (.06)
Tenure entrepreneur	.34*** (.49)	-.04 (8.63)
ICT/life science industry	.12 (7.68)	-.17 (7.73)
Services/sales industry	-.01 (8.39)	.15 (.38)
VC service activities <sup>§</sup>	.85* (13.36)	
VC monitoring activities <sup>¶</sup>		.81** (7.40)
<i>F</i> -statistic	2.85**	3.38**
R <sup>2</sup>	.17	.20

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .10$ .

<sup>†</sup> Standardized beta coefficients ( $\beta$ ) are depicted; standard errors (s.e.) in parentheses.

<sup>‡</sup> A single 2-SLS analysis which includes both the VC service and VC monitoring activities is not possible. The newly created variables for VC service and VC monitoring activities in the first step of 2-SLS are highly correlated and cause a multicollinearity problem.

<sup>§</sup> Instrumental variables: frequency of contact and number of VCs involved with the firm.

<sup>¶</sup> Instrumental variables: frequency of contact and invested amount VC.

Table 3

The Effect of the Entrepreneurial Firm's  
Control Systems and the Venture Capitalist  
(VC) Governance Activities on the  
Entrepreneurial Firm's Financial  
Performance

	OLS results	Financial performance	
		$\beta$	s.e.
Step 1			
Intercept <sup>†</sup>		**	(1.01)
Firm age	.10	(.02)	
Firm size	.07	(.01)	
Tenure entrepreneur	-.28*	(.06)	
ICT/life science industry	-.28*	(1.10)	
Services/sales industry	-.06	(1.11)	
VC monitoring activities	-.05	(.55)	
VC service activities	-.17	(.67)	
Cost control system	-.02	(.50)	
Incentive and reward system	.22***	(.02)	
<i>F</i> -statistic	1.77***		
R <sup>2</sup>	.18		
Step 2a			
VC service $\times$ cost control system	.33*	(.75)	
$\Delta F$ -statistic	4.80*		
$\Delta R^2$	.05		
Step 2b			
VC service $\times$ incentive and reward system	-.13	(.03)	
$\Delta F$ -statistic	.10		
$\Delta R^2$	.01		
Step 2c			
VC monitoring $\times$ cost control system	-.35**	(.54)	
$\Delta F$ -statistic	9.29**		
$\Delta R^2$	.09		
Step 2d			
VC monitoring $\times$ incentive and reward system	.02	(.02)	
$\Delta F$ -statistic	.03		
$\Delta R^2$	.00		

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .10$ .

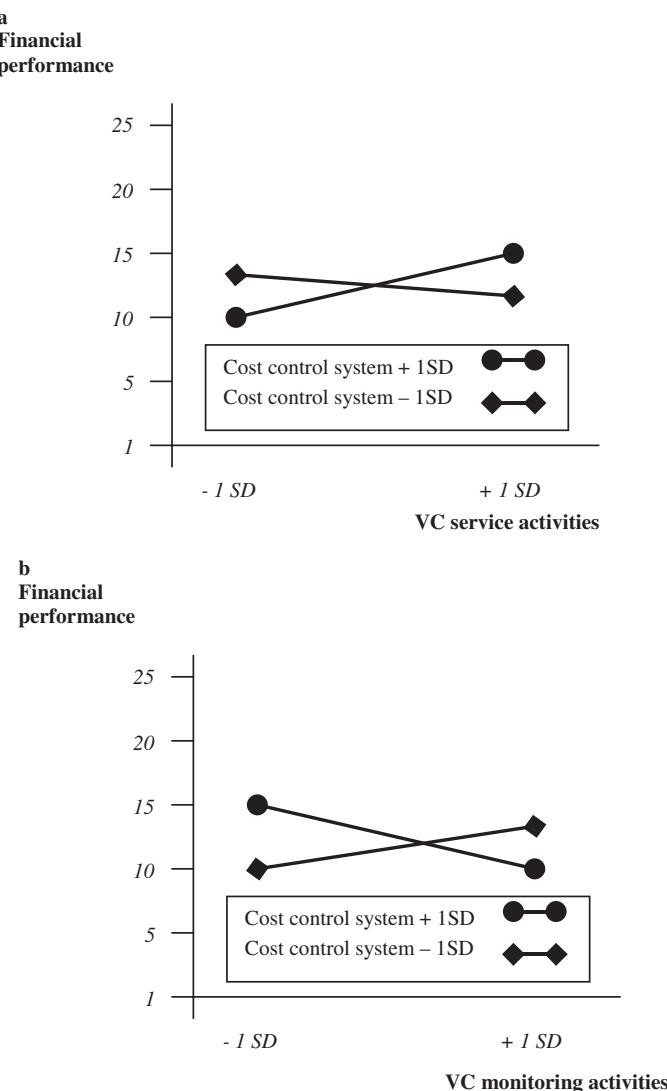
<sup>†</sup> Standardized beta coefficients ( $\beta$ ) are depicted; standard errors (s.e.) in parentheses.

regression analyses with mean-centered product-term variables (see also Aiken & West, 1991). The results of the hypotheses are as follows. Hypothesis 1 is not supported for the proposed positive impact of the VC service activities on the entrepreneurial firm's control systems. Rather, contrary to our expectations, the degree of VC service activities is negatively related to the sophistication of a cost control system in the entrepreneurial firm (Table 2; equation 1:  $\beta = -.27$  and  $p < .05$ ).

Hypothesis 2 is supported, we find that the VC service activities are positively associated with entrepreneurial firms that employ incentive and reward systems (Table 2;

Figure 1

Moderating Mechanisms of the Venture Capitalist (VC) Governance Activities.  
 Moderating Effect of VC Monitoring Activities on the Cost Control and  
 Entrepreneurial Firm's Financial Performance Relationship



equation 2:  $\beta = .85$  and  $p < .05$ ). Hypothesis 3 is only supported for the moderating effect of VC service activities on the relationship between cost control systems and the entrepreneurial firm's performance (Table 3; step 2a:  $\beta = .33$  and  $p < .05$ ). Figure 1a shows the interpretation of this interaction effect. It appears that when control systems are present in the entrepreneurial firm (i.e., cost control system + 1 SD), the VC service activities positively contribute to the entrepreneurial firm's financial performance. When cost control systems are hardly present in the entrepreneurial firm (i.e., cost control system - 1 SD),

the relationship between VC service activities and the entrepreneurial firm is slightly negative. The moderating effect of the VC service activities on the relationship between incentive and reward systems and the entrepreneurial firm's performance is not significant (Table 3; step 2b).

Hypothesis 4 is accepted, which suggests that the VC monitoring activities force the entrepreneurial firm to use a cost control system (Table 2; equation 1:  $\beta = .33$  and  $p < .01$ ). Hypothesis 5 is supported; the degree of VC monitoring activities is significantly related to the sophistication of incentive and reward systems in the entrepreneurial firm (Table 2; equation 3:  $\beta = .81$  and  $p < .01$ ).

Hypothesis 6 is only supported for the negative moderating effect of VC monitoring activities on the relationship between cost control systems and the entrepreneurial firm's financial performance (Table 3; step 2c:  $\beta = -.35$  and  $p < .01$ ). Figure 1b shows the interpretation of this interaction effect. It appears that when control systems are present in the entrepreneurial firm (i.e., cost control system + 1 SD), VC monitoring activities have a negative impact on the entrepreneurial firm's financial performance. This might indeed suggest that either VCs overestimate the principal-agent problems in entrepreneurial firms or that they introduce monitoring mechanisms which accumulate and merely duplicate the effects of existing ones, resulting in additional agency costs and, potentially, further adverse effects through the loss of trust between managers and the VC.

When cost control systems are hardly present in the entrepreneurial firm (i.e., cost control system -1 SD), the relationship between VC monitoring activities and the entrepreneurial firm appears to be positive. This effect can be explained by the possibility that the VC monitoring activities substitute for the lack of control systems. Additionally, it is possible that a reduced emphasis on costs in combination with VC monitoring activities may offer more opportunities for the entrepreneur to concentrate on and reap the benefits of product innovations (see also Beekun, Stedham, & Young, 1998; Zahra, 1996b).

Finally, we do not find a moderating effect of the VC monitoring activities on the relationship between incentive and reward systems and the entrepreneurial firm's financial performance (Table 3; step 2d).

## Conclusions

In this article, an agency theory perspective and a resource-dependency theory perspective were used to investigate whether the VC's governance activities influence on the entrepreneurial firm's performance by making use of the entrepreneurial firm's control systems. To this aim, two corresponding VC board activities (i.e., service and monitoring) and two control systems (incentive and reward systems and cost control) were included into a set of multivariate regression models. Our results indicate that VC service and monitoring activities contribute to the entrepreneurial firm's utilization of incentive and reward systems (hypothesis 2 and 5), and VC monitoring activities also positively contribute to the entrepreneurial firm's use of cost control systems (hypothesis 4). However, contrary to our expectations, the VC's service activities tend to be negatively related to the degree of sophistication of the entrepreneurial firm's cost control systems (hypothesis 1). Some anecdotes suggest that some type of VCs are much concerned with financial management issues in their relationship with the entrepreneurial firm (cf. hypothesis 4 and 5), whilst other types of VCs would be more focused on entrepreneurial issues. As such, the latter types may provide service activities which lead to more expenses (e.g., on innovation) for the entrepreneurial firm, rather than directing the entrepreneurial firm to

control its costs in order to meet short-term financial objectives. We suggest that future research is needed to clarify the impact of particular types of VCs on the entrepreneurial firm.

With regard to the moderating mechanisms which might explain how the VC contributes to the entrepreneurial firm's financial performance, we find the following. The service activities of VCs have a positive effect on the relationship between cost control and firm performance (hypothesis 3), while there exists a clear negative moderating effect of the VC's monitoring activities on the relationship between cost systems and firm performance (hypothesis 6). These findings suggest that VCs who contribute to the entrepreneurial firm's use of cost control systems by providing critical resources through their service activities may enhance the entrepreneurial firm's performance, whereas VCs who rely on these control systems in order to emphasize financial outcomes through their monitoring activities may erode the entrepreneurial firm's performance. This latter finding suggests that in terms of control "more" is not necessarily "better." Due to the not only complementary but also substitutive relationship of monitoring mechanisms, principals can increase agency costs by excessive monitoring. The development, implementation, and use of control and incentive systems come at a cost not only in terms of their operation, but also potentially with regard to behavioral incentives of managers. If the overemphasis of managerial control leads to a loss of trust between entrepreneurial teams and VCs, managers may become mainly concerned with justifying their decisions rather than receiving support from the VC.

Consequently, we conclude that if VCs align their governance activities to the entrepreneurial firm's cost control systems by providing advice and guidance through their service activities, their involvement leads to a positive effect on the entrepreneurial firm's financial performance. However, if they try to focus the use of these cost control systems on emphasizing accountability and result-oriented management through their monitoring activities, detrimental effects on firm performance are likely to occur.

From a methodological point of view, this article has demonstrated that at least three issues explain why so little agreement exists in the literature about whether the VC's value-adding activities increase entrepreneurial firm performance or not. First, neglecting the existence of a "blackbox" between the VC's value-adding activities and entrepreneurial firm's performance may lead to spurious effects, because it neglects the possibility that VCs fine-tune their value-adding activities to resources or systems present in the entrepreneurial firm (see also Wijbenga et al., 2003). Second, reciprocal effects between the VC's value-adding activities and the entrepreneurial firm's performance may lead to biased results (i.e., simultaneity bias). Including variables in the regression model that particularly correlate with the VC's value-adding activities might help to solve this problem (see also Stewart & Gill, 1991, p. 64). In the present study we used the entrepreneurial firm's age, size, and industry as well as management tenure as control variables, while cost control systems and incentive and reward systems were used as predictor variables. However, for two hypotheses, the Hausman (1978)–Wu (1973) test showed that the simultaneity bias was still present when using OLS estimation techniques. These hypotheses were eventually tested with an instrumental variables approach in a 2-SLS model. The present study showed that by taking into account these methodological problems, more fine-grained insights can be obtained into the VC value-added proposition.

Third, it is likely that not all supposedly value-adding activities conducted by the VC contribute positively to the entrepreneurial firm's performance. The findings of our study suggest that VCs are well-advised not to engage in too much monitoring when sophisticated control systems are already present in the entrepreneurial firm, since this can lead to negative performance effects (see also Amit et al., 1998; Landström, 1993). This is an

issue well worthwhile considering also in the public debate about corporate governance, particularly given the increasing importance attributed nowadays by boards to control issues rather than the provision of advice and support. In addition, VCs who align their service activities to the entrepreneurial firm's cost control systems can add to the entrepreneurial firm's financial performance.

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## Appendix

<b>VC's value-adding activities</b>	<b>Service activities</b>	<b>Monitoring activities</b>
Recruit additional managers	<b>0.66</b>	0.13
Interface with the investor group	<b>0.64</b>	0.30
Assistance on introducing new products/services to the market	<b>0.72</b>	0.14
Assistance on operations	<b>0.68</b>	-0.15
Getting new finance partners	<b>0.64</b>	0.26
Contact with advisors	<b>0.63</b>	0.24
Financial monitoring	0.16	<b>0.81</b>
Evaluate our business strategy	0.13	<b>0.76</b>
Operational monitoring	0.24	<b>0.79</b>
Evaluate product-market opportunities	0.09	<b>0.77</b>
Percentage of variance explained (total: 54.72%)	27.52%	27.20%
<b>Control systems</b>	<b>Incentive and reward system</b>	<b>Cost control system</b>
Formal job analysis	<b>0.57</b>	-0.22
Formal performance appraisals	<b>0.67</b>	-0.04
Performance appraisals determine compensations	<b>0.57</b>	-0.35
Attitude surveys on a regular basis	<b>0.61</b>	-0.14
Access to company incentive plans, profit-sharing plans, and/or gain-sharing plans	<b>0.53</b>	0.02
Formal information sharing program	<b>0.55</b>	0.14
Use of cost centers	0.22	<b>0.61</b>
Use of standard costs	0.26	<b>0.54</b>
Price cutting	-0.10	<b>0.50</b>
Minimization of advertising expenditures	-0.06	<b>0.48</b>
Timid, incremental behavior	-0.05	<b>0.55</b>
Average costs bringing products to market as a percentage of sales over the last three years (reverse coded)	-0.36	<b>0.54</b>
Average R&D expenditure as a percentage of sales over the last three years (reverse coded)	-0.29	<b>0.56</b>
Percentage of variance explained (total: 40.76%)	21.92%	18.84%